

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

May 14, 1993

TO: Burlington Environmental Engineering

PROJECT NUMBER: 624878-7306

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31448

RECEIVED
SEP 9 1993

BURLINGTON ENVIRONMENTAL, INC.
CORPORATE OFFICE

FILE COPY

The samples were taken on 4/14/93 and were received at Sound on 4/15/93. The samples were analyzed for Volatile Organics in accordance with EPA SW-846 Method 8240, Semivolatile Organics in accordance with EPA SW-846 Method 8270, Total Petroleum Hydrocarbons by EPA Method 418.1 modified for soil, and Total Petroleum Fuel Hydrocarbons by EPA Method 8015 modified. Two oil samples were qualitatively screened for total petroleum fuel hydrocarbons in accordance with WA State DOE Method WTPH-HCID. The densities of the oil samples were determined in accordance with Standard Methods for the Examination of Water and Wastewater (16th Ed.) Method 213 E.

VOLATILE ORGANICS

Samples 31448-1 through 31448-6 were analyzed on 4/20/93. Methylene chloride and acetone were detected in the method blanks at levels above the IDL. Results reported for these compounds in the associated samples were flagged B to indicate this. All QC parameters were within acceptance limits.

SEMIVOLATILE ORGANICS

Samples 31448-1 through 31448-6 were extracted on 4/20/93 and analyzed on 4/21/93. Di-n-butylphthalate was detected in the method blank above the IDL. Results reported for this compound in the associated samples were flagged B to indicate this. All QC parameters were within acceptance limits.

TOTAL PETROLEUM FUEL HYDROCARBONS

Samples 31448-1 through 31448-6 were extracted on 4/21/93 and analyzed on 4/22/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

TOTAL PETROLEUM HYDROCARBONS

Samples 31448-1 through 31448-6 were extracted on 4/19/93 and analyzed on 4/20/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

USEPA RCRA



3012504

SOUND ANALYTICAL SERVICES, INC.

PROJECT NUMBER: 624878-7306

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31448

HYDROCARBON IDENTIFICATION

Samples 31448-7 and 31448-8 were extracted on 4/19/93 and analyzed on 4/20/93. No contamination above the PQL was present in the method blank.

SPECIFIC GRAVITY

The specific gravity for samples 31448-7 and 31448-8 was determined on 4/19/93.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Burlington Environmental, Date: April 28, 1993
Technical Services

Report On: Analysis of Oil & Water Lab No.: 31448
Page 1 of 38

IDENTIFICATION:

Samples received on 04-14-93
Project: 624878-7306 Pier 91

ANALYSIS:

Lab Sample No. 31448-1
Matrix: Water

Client ID: CP-W10-0493

Volatile Organics by Method 8240
Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1, J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	ND	5	
Acetone	12	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 2 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-1
 Matrix: Water

Client ID: CP-W10-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	14	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	3.2	5	J
Chlorobenzene	ND	5	
Ethyl Benzene	9.5	5	J
Styrene	ND	5	
Total Xylenes	3.7	5	J

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	103	88 - 110	81 - 117
Bromofluorobenzene	91	86 - 115	74 - 121
1,2-Dichloroethane-D4	102	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 3 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-1
 Matrix: Water

Client ID: CP-W10-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-20-93
 Date Analyzed: 4-21-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.2	
bis(2-Chloroethyl) ether	ND	9.2	
2-Chlorophenol	ND	9.2	
1,3-Dichlorobenzene	ND	9.2	
1,4-Dichlorobenzene	ND	9.2	
Benzyl Alcohol	ND	18	
1,2-Dichlorobenzene	ND	9.2	
2-Methylphenol	ND	9.2	
bis(2-Chloroisopropyl) ether	ND	9.2	
4-Methylphenol	ND	9.2	
N-Nitroso-Di-N-propylamine	ND	9.2	
Hexachloroethane	ND	9.2	
Nitrobenzene	ND	9.2	
Isophorone	ND	9.2	
2-Nitrophenol	ND	9.2	
2,4-Dimethylphenol	ND	9.2	
Benzoic Acid	ND	46	
bis(2-Chloroethoxy) methane	ND	9.2	
2,4-Dichlorophenol	ND	9.2	
1,2,4-Trichlorobenzene	ND	9.2	
Naphthalene	19	9.2	
4-Chloroaniline	ND	18	
Hexachlorobutadiene	ND	9.2	
4-Chloro-3-methylphenol	ND	18	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 4 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-1
 Matrix: Water

Client ID: CP-W10-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	24	9.2	
Hexachlorocyclopentadiene	ND	9.2	
2,4,6-Trichlorophenol	ND	9.2	
2,4,5-Trichlorophenol	ND	9.2	
2-Chloronaphthalene	ND	9.2	
2-Nitroaniline	ND	46	
Dimethyl phthalate	ND	9.2	
Acenaphthylene	ND	9.2	
2,6-Dinitrotoluene	ND	9.2	
3-Nitroaniline	ND	46	
Acenaphthene	3.5	9.2	J
2,4-Dinitrophenol	ND	46	
4-Nitrophenol	ND	46	
Dibenzofuran	3.9	9.2	J
2,4-Dinitrotoluene	ND	9.2	
Diethylphthalate	ND	9.2	
4-Chlorophenyl phenyl ether	ND	9.2	
Fluorene	6.1	9.2	J
4-Nitroaniline	ND	46	
4,6-Dinitro-2-methylphenol	ND	46	
N-Nitrosodiphenylamine	ND	9.2	
4-Bromophenyl phenyl ether	ND	9.2	
Hexachlorobenzene	ND	9.2	
Pentachlorophenol	ND	46	
Phenanthrene	4.3	9.2	J
Anthracene	ND	9.2	
Di-n-butylphthalate	20	9.2	B1

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 5 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-1
 Matrix: Water

Client ID: CP-W10-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.2	J
Pyrene	ND	9.2	
Butyl benzyl phthalate	ND	9.2	
3,3'-Dichlorobenzidine	ND	18	
Benzo(a)anthracene	ND	9.2	
Chrysene	ND	9.2	
bis(2-ethylhexyl)phthalate	ND	9.2	
Di-n-octyl phthalate	ND	9.2	
Benzo(b)fluoranthene	ND	9.2	
Benzo(k)fluoranthene	2.3	9.2	
Benzo(a)pyrene	ND	9.2	
Indeno(1,2,3-cd)pyrene	ND	9.2	
Dibenz(a,h)anthracene	ND	9.2	
Benzo(g,h,i)perylene	ND	9.2	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	69	35 - 114	23 - 120
2-Fluorobiphenyl	71	43 - 116	30 - 115
p-Terphenyl-d ₁₄	83	33 - 141	18 - 137
Phenol-d ₆	22	10 - 94	24 - 113
2-Fluorophenol	45	21 - 100	25 - 121
2,4,6-Tribromophenol	79	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 6 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-1
Matrix: Water

Client ID: CP-W10-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	27	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	X2

SURROGATE RECOVERY, %

1-chlorooctane	104
o-terphenyl	121

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 7 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-2
 Matrix: Water

Client ID: CP-109M-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	0.65	5	B1, J
Acetone	59	50	B2
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	0.64	5	J
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 8 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-2
 Matrix: Water

Client ID: CP-109M-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	105	88 - 110	81 - 117
Bromofluorobenzene	90	86 - 115	74 - 121
1,2-Dichloroethane-D4	97	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 9 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-2
 Matrix: Water

Client ID: CP-109M-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-20-93
 Date Analyzed: 4-21-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.4	
bis(2-Chloroethyl) ether	ND	9.4	
2-Chlorophenol	ND	9.4	
1,3-Dichlorobenzene	ND	9.4	
1,4-Dichlorobenzene	ND	9.4	
Benzyl Alcohol	ND	19	
1,2-Dichlorobenzene	ND	9.4	
2-Methylphenol	ND	9.4	
bis(2-Chloroisopropyl) ether	ND	9.4	
4-Methylphenol	ND	9.4	
N-Nitroso-Di-N-propylamine	ND	9.4	
Hexachloroethane	ND	9.4	
Nitrobenzene	ND	9.4	
Isophorone	ND	9.4	
2-Nitrophenol	ND	9.4	
2,4-Dimethylphenol	ND	9.4	
Benzoic Acid	ND	47	
bis(2-Chloroethoxy) methane	ND	9.4	
2,4-Dichlorophenol	ND	9.4	
1,2,4-Trichlorobenzene	ND	9.4	
Naphthalene	ND	9.4	
4-Chloroaniline	ND	19	
Hexachlorobutadiene	ND	9.4	
4-Chloro-3-methylphenol	ND	19	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 10 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-2
 Matrix: Water

Client ID: CP-109M-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.4	
Hexachlorocyclopentadiene	ND	9.4	
2,4,6-Trichlorophenol	ND	9.4	
2,4,5-Trichlorophenol	ND	9.4	
2-Chloronaphthalene	ND	9.4	
2-Nitroaniline	ND	47	
Dimethyl phthalate	ND	9.4	
Acenaphthylene	ND	9.4	
2,6-Dinitrotoluene	ND	9.4	
3-Nitroaniline	ND	47	
Acenaphthene	ND	9.4	
2,4-Dinitrophenol	ND	47	
4-Nitrophenol	ND	47	
Dibenzofuran	ND	9.4	
2,4-Dinitrotoluene	ND	9.4	
Diethylphthalate	ND	9.4	
4-Chlorophenyl phenyl ether	ND	9.4	
Fluorene	ND	9.4	
4-Nitroaniline	ND	47	
4,6-Dinitro-2-methylphenol	ND	47	
N-Nitrosodiphenylamine	ND	9.4	
4-Bromophenyl phenyl ether	ND	9.4	
Hexachlorobenzene	ND	9.4	
Pentachlorophenol	ND	47	
Phenanthrene	ND	9.4	
Anthracene	ND	9.4	
Di-n-butylphthalate	5.2	9.4	B1, J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 11 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-2
 Matrix: Water

Client ID: CP-109M-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.4	
Pyrene	ND	9.4	
Butyl benzyl phthalate	ND	9.4	
3,3'-Dichlorobenzidine	ND	19	
Benzo(a)anthracene	ND	9.4	
Chrysene	ND	9.4	
bis(2-ethylhexyl)phthalate	ND	9.4	
Di-n-octyl phthalate	ND	9.4	
Benzo(b)fluoranthene	ND	9.4	
Benzo(k)fluoranthene	ND	9.4	
Benzo(a)pyrene	ND	9.4	
Indeno(1,2,3-cd)pyrene	ND	9.4	
Dibenz(a,h)anthracene	ND	9.4	
Benzo(g,h,i)perylene	ND	9.4	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	78	35 - 114	23 - 120
2-Fluorobiphenyl	64	43 - 116	30 - 115
p-Terphenyl-d ₁₄	85	33 - 141	18 - 137
Phenol-d ₆	20	10 - 94	24 - 113
2-Fluorophenol	44	21 - 100	25 - 121
2,4,6-Tribromophenol	68	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 12 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-2
Matrix: Water

Client ID: CP-109M-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	44	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	96
o-terphenyl	126

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 13 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-3
Matrix: Water

Client ID: CP-109-0493

Volatile Organics by Method 8240
Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1, J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	76	10	
Methylene Chloride	ND	5	
Acetone	9.2	50	J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	2.8	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 14 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-3
 Matrix: Water

Client ID: CP-109-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	29	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	6.6	5	
Chlorobenzene	ND	5	
Ethyl Benzene	3.4	5	J
Styrene	ND	5	
Total Xylenes	4.8	5	J

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	102	88 - 110	81 - 117
Bromofluorobenzene	91	86 - 115	74 - 121
1,2-Dichloroethane-D4	95	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 15 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-3
Matrix: Water

Client ID: CP-109-0493

Semivolatile Organics Per EPA SW-846 Method 8270
Date Extracted: 4-20-93
Date Analyzed: 4-21-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.1	
bis(2-Chloroethyl) ether	ND	9.1	
2-Chlorophenol	ND	9.1	
1,3-Dichlorobenzene	ND	9.1	
1,4-Dichlorobenzene	ND	9.1	
Benzyl Alcohol	ND	18	
1,2-Dichlorobenzene	ND	9.1	
2-Methylphenol	ND	9.1	
bis(2-Chloroisopropyl)ether	ND	9.1	
4-Methylphenol	ND	9.1	
N-Nitroso-Di-N-propylamine	ND	9.1	
Hexachloroethane	ND	9.1	
Nitrobenzene	ND	9.1	
Isophorone	ND	9.1	
2-Nitrophenol	ND	9.1	
2,4-Dimethylphenol	ND	9.1	
Benzoic Acid	ND	45	
bis(2-Chloroethoxy)methane	ND	9.1	
2,4-Dichlorophenol	ND	9.1	
1,2,4-Trichlorobenzene	ND	9.1	
Naphthalene	14	9.1	
4-Chloroaniline	ND	18	
Hexachlorobutadiene	ND	9.1	
4-Chloro-3-methylphenol	ND	18	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 16 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-3
 Matrix: Water

Client ID: CP-109-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	62	9.1	
Hexachlorocyclopentadiene	ND	9.1	
2,4,6-Trichlorophenol	ND	9.1	
2,4,5-Trichlorophenol	ND	9.1	
2-Chloronaphthalene	ND	9.1	
2-Nitroaniline	ND	45	
Dimethyl phthalate	ND	9.1	
Acenaphthylene	ND	9.1	
2,6-Dinitrotoluene	ND	9.1	
3-Nitroaniline	ND	45	
Acenaphthene	ND	9.1	
2,4-Dinitrophenol	ND	45	
4-Nitrophenol	ND	45	
Dibenzofuran	1.7	9.1	J
2,4-Dinitrotoluene	ND	9.1	
Diethylphthalate	ND	9.1	
4-Chlorophenyl phenyl ether	ND	9.1	
Fluorene	3.8	9.1	J
4-Nitroaniline	ND	45	
4,6-Dinitro-2-methylphenol	ND	45	
N-Nitrosodiphenylamine	ND	9.1	
4-Bromophenyl phenyl ether	ND	9.1	
Hexachlorobenzene	ND	9.1	
Pentachlorophenol	ND	45	
Phenanthrene	2.5	9.1	J
Anthracene	ND	9.1	
Di-n-butylphthalate	11	9.1	B1

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 17 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-3
 Matrix: Water

Client ID: CP-109-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.1	
Pyrene	ND	9.1	
Butyl benzyl phthalate	ND	9.1	
3,3'-Dichlorobenzidine	ND	18	
Benzo(a)anthracene	ND	9.1	
Chrysene	ND	9.1	
bis(2-ethylhexyl)phthalate	ND	9.1	
Di-n-octyl phthalate	ND	9.1	
Benzo(b)fluoranthene	ND	9.1	
Benzo(k)fluoranthene	ND	9.1	
Benzo(a)pyrene	ND	9.1	
Indeno(1,2,3-cd)pyrene	ND	9.1	
Dibenz(a,h)anthracene	ND	9.1	
Benzo(g,h,i)perylene	ND	9.1	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	67	35 - 114	23 - 120
2-Fluorobiphenyl	75	43 - 116	30 - 115
p-Terphenyl-d ₁₄	74	33 - 141	18 - 137
Phenol-d ₆	20	10 - 94	24 - 113
2-Fluorophenol	41	21 - 100	25 - 121
2,4,6-Tribromophenol	83	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 18 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-3
Matrix: Water

Client ID: CP-109-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	130	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	4.1	0.75	X2

TPH as Gasoline, Diesel

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	105
o-terphenyl	117

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 19 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-4
 Matrix: Water

Client ID: CP-116M-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	0.67	5	B1, J
Acetone	58	50	B2
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	0.70	5	J
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 20 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-4
 Matrix: Water

Client ID: CP-116M-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	109	88 - 110	81 - 117
Bromofluorobenzene	88	86 - 115	74 - 121
1,2-Dichloroethane-D4	95	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 21 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-4
 Matrix: Water

Client ID: CP-116M-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-20-93
 Date Analyzed: 4-21-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.4	
bis(2-Chloroethyl) ether	ND	9.4	
2-Chlorophenol	ND	9.4	
1,3-Dichlorobenzene	ND	9.4	
1,4-Dichlorobenzene	ND	9.4	
Benzyl Alcohol	ND	19	
1,2-Dichlorobenzene	ND	9.4	
2-Methylphenol	ND	9.4	
bis(2-Chloroisopropyl) ether	ND	9.4	
4-Methylphenol	ND	9.4	
N-Nitroso-Di-N-propylamine	ND	9.4	
Hexachloroethane	ND	9.4	
Nitrobenzene	ND	9.4	
Isophorone	ND	9.4	
2-Nitrophenol	ND	9.4	
2,4-Dimethylphenol	ND	9.4	
Benzoic Acid	ND	47	
bis(2-Chloroethoxy)methane	ND	9.4	
2,4-Dichlorophenol	ND	9.4	
1,2,4-Trichlorobenzene	ND	9.4	
Naphthalene	ND	9.4	
4-Chloroaniline	ND	19	
Hexachlorobutadiene	ND	9.4	
4-Chloro-3-methylphenol	ND	19	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 22 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-4
Matrix: Water

Client ID: CP-116M-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.4	
Hexachlorocyclopentadiene	ND	9.4	
2,4,6-Trichlorophenol	ND	9.4	
2,4,5-Trichlorophenol	ND	9.4	
2-Chloronaphthalene	ND	9.4	
2-Nitroaniline	ND	47	
Dimethyl phthalate	ND	9.4	
Acenaphthylene	ND	9.4	
2,6-Dinitrotoluene	ND	9.4	
3-Nitroaniline	ND	47	
Acenaphthene	ND	9.4	
2,4-Dinitrophenol	ND	47	
4-Nitrophenol	ND	47	
Dibenzofuran	ND	9.4	
2,4-Dinitrotoluene	ND	9.4	
Diethylphthalate	ND	9.4	
4-Chlorophenyl phenyl ether	ND	9.4	
Fluorene	ND	9.4	
4-Nitroaniline	ND	47	
4,6-Dinitro-2-methylphenol	ND	47	
N-Nitrosodiphenylamine	ND	9.4	
4-Bromophenyl phenyl ether	ND	9.4	
Hexachlorobenzene	ND	9.4	
Pentachlorophenol	ND	47	
Phenanthrene	ND	9.4	
Anthracene	ND	9.4	
Di-n-butylphthalate	8.0	9.4	B1, J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 23 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-4
 Matrix: Water

Client ID: CP-116M-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.4	
Pyrene	ND	9.4	
Butyl benzyl phthalate	ND	9.4	
3,3'-Dichlorobenzidine	ND	19	
Benzo(a)anthracene	ND	9.4	
Chrysene	ND	9.4	
bis(2-ethylhexyl)phthalate	ND	9.4	
Di-n-octyl phthalate	ND	9.4	
Benzo(b)fluoranthene	ND	9.4	
Benzo(k)fluoranthene	ND	9.4	
Benzo(a)pyrene	ND	9.4	
Indeno(1,2,3-cd)pyrene	ND	9.4	
Dibenz(a,h)anthracene	ND	9.4	
Benzo(g,h,i)perylene	ND	9.4	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	79	35 - 114	23 - 120
2-Fluorobiphenyl	66	43 - 116	30 - 115
p-Terphenyl-d ₁₄	88	33 - 141	18 - 137
Phenol-d ₆	22	10 - 94	24 - 113
2-Fluorophenol	46	21 - 100	25 - 121
2,4,6-Tribromophenol	75	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 24 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-4
Matrix: Water

Client ID: CP-116M-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	32	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

SURROGATE RECOVERY, %

1-chlorooctane	92
o-terphenyl	112

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 25 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-5
Matrix: Water

Client ID: CP-116-0493

Volatile Organics by Method 8240
Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	7.5	10	J
Chloroethane	4.7	10	J
Methylene Chloride	ND	5	
Acetone	18	50	B1, J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	0.21	5	J
1,1-Dichloroethane	96	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	0.96	25	J
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 26 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-5
 Matrix: Water

Client ID: CP-116-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	23	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	5.5	5	
Chlorobenzene	ND	5	
Ethyl Benzene	12	5	
Styrene	ND	5	
Total Xylenes	27	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	103	88 - 110	81 - 117
Bromofluorobenzene	91	86 - 115	74 - 121
1,2-Dichloroethane-D4	94	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 27 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-5
 Matrix: Water

Client ID: CP-116-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-20-93
 Date Analyzed: 4-21-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	20	J
bis(2-Chloroethyl) ether	ND	20	
2-Chlorophenol	ND	20	
1,3-Dichlorobenzene	ND	20	
1,4-Dichlorobenzene	ND	20	
Benzyl Alcohol	ND	40	
1,2-Dichlorobenzene	ND	20	
2-Methylphenol	ND	20	
bis(2-Chloroisopropyl) ether	ND	20	
4-Methylphenol	ND	20	
N-Nitroso-Di-N-propylamine	ND	20	
Hexachloroethane	ND	20	
Nitrobenzene	ND	20	
Isophorone	ND	20	
2-Nitrophenol	ND	20	
2,4-Dimethylphenol	15	20	
Benzoic Acid	ND	100	
bis(2-Chloroethoxy)methane	ND	20	
2,4-Dichlorophenol	ND	20	
1,2,4-Trichlorobenzene	ND	20	
Naphthalene	ND	20	
4-Chloroaniline	ND	40	
Hexachlorobutadiene	ND	20	
4-Chloro-3-methylphenol	200	40	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 28 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-5
 Matrix: Water

Client ID: CP-116-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	20	
Hexachlorocyclopentadiene	ND	20	
2,4,6-Trichlorophenol	ND	20	
2,4,5-Trichlorophenol	ND	20	
2-Chloronaphthalene	ND	20	
2-Nitroaniline	ND	100	
Dimethyl phthalate	ND	20	
Acenaphthylene	ND	20	
2,6-Dinitrotoluene	ND	20	
3-Nitroaniline	ND	100	
Acenaphthene	2.4	20	J
2,4-Dinitrophenol	ND	100	
4-Nitrophenol	ND	100	
Dibenzofuran	ND	20	
2,4-Dinitrotoluene	ND	20	
Diethylphthalate	ND	20	
4-Chlorophenyl phenyl ether	ND	20	
Fluorene	ND	20	
4-Nitroaniline	ND	100	
4,6-Dinitro-2-methylphenol	ND	100	
N-Nitrosodiphenylamine	ND	20	
4-Bromophenyl phenyl ether	ND	20	
Hexachlorobenzene	ND	20	
Pentachlorophenol	ND	100	
Phenanthrene	1.9	20	J
Anthracene	ND	20	
Di-n-butylphthalate	16	20	B1, J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 29 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-5
 Matrix: Water

Client ID: CP-116-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	20	
Pyrene	ND	20	
Butyl benzyl phthalate	ND	20	
3,3'-Dichlorobenzidine	ND	40	
Benzo(a)anthracene	ND	20	
Chrysene	ND	20	
bis(2-ethylhexyl)phthalate	ND	20	
Di-n-octyl phthalate	ND	20	
Benzo(b)fluoranthene	ND	20	
Benzo(k)fluoranthene	ND	20	
Benzo(a)pyrene	ND	20	
Indeno(1,2,3-cd)pyrene	ND	20	
Dibenz(a,h)anthracene	ND	20	
Benzo(g,h,i)perylene	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	67	35 - 114	23 - 120
2-Fluorobiphenyl	87	43 - 116	30 - 115
p-Terphenyl-d ₁₄	90	33 - 141	18 - 137
Phenol-d ₆	22	10 - 94	24 - 113
2-Fluorophenol	45	21 - 100	25 - 121
2,4,6-Tribromophenol	89	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 30 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-5
Matrix: Water

Client ID: CP-116-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	86	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	5.1	0.75	X2

TPH as Gasoline, Diesel

SURROGATE RECOVERY, %

1-chlorooctane	98
o-terphenyl	119

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 31 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-6
 Matrix: Water

Client ID: CP-39-3-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	4.1	10	J
Chloroethane	130	10	
Methylene Chloride	1.0	5	B1, J
Acetone	4.4	50	B1, J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	10	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 32 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-6
 Matrix: Water

Client ID: CP-39-3-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	14	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	6.9	5	
Chlorobenzene	ND	5	
Ethyl Benzene	11	5	
Styrene	ND	5	
Total Xylenes	60	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	104	88 - 110	81 - 117
Bromofluorobenzene	90	86 - 115	74 - 121
1,2-Dichloroethane-D4	94	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. ANALYTICAL, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 33 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-6
 Matrix: Water

Client ID: CP-39-3-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-20-93
 Date Analyzed: 4-21-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	3.2	10	J
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 34 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-6
 Matrix: Water

Client ID: CP-39-3-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	35	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	
2,6-Dinitrotoluene	ND	10	
3-Nitroaniline	ND	50	
Acenaphthene	7.3	10	J
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	10	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	4.2	10	J
Anthracene	ND	10	
Di-n-butylphthalate	11	10	B1

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 35 of 38
 Lab No. 31448
 April 28, 1993

Lab Sample No. 31448-6
 Matrix: Water

Client ID: CP-39-3-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
Chrysene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	72	35 - 114	23 - 120
2-Fluorobiphenyl	79	43 - 116	30 - 115
p-Terphenyl-d ₁₄	78	33 - 141	18 - 137
Phenol-d ₆	25	10 - 94	24 - 113
2-Fluorophenol	50	21 - 100	25 - 121
2,4,6-Tribromophenol	83	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 36 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-6
Matrix: Water

Client ID: CP-39-3-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	54	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	1.6	0.75	X2
TPH as	Gasoline		

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	105
o-terphenyl	128

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 37 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-7
Matrix: Oil

Client ID: CP-109-0493

WTPH-HCID
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameters</u>	<u>Concentration, mg/kg</u>	<u>Flag</u>
Gasoline (C7 - C12)	> 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	> 100	

SURROGATE RECOVERY, %

1-chlorooctane	X10
o-terphenyl	X10

ND - Not Detected
PQL - Practical Quantitation Limit

<u>Parameter</u>	<u>Result</u>
Specific gravity	0.8947

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 38 of 38
Lab No. 31448
April 28, 1993

Lab Sample No. 31448-8
Matrix: Oil

Client ID: CP-39-3-0493

WTPH-HCID
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameters</u>	<u>Concentration, mg/kg</u>	<u>Flag</u>
Gasoline (C7 - C12)	> 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	> 100	

SURROGATE RECOVERY, %

1-chlorooctane	X10
o-terphenyl	X10

ND - Not Detected
PQL - Practical Quantitation Limit

<u>Parameter</u>	<u>Result</u>
Specific gravity	0.8745

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31448qc1
Units: ug/L
Date: April 28, 1993
Blank No: V9981

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	7.7	5	
Acetone	4.9	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC. MEMPHIS, TN

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31448qc1
Date: April 28, 1993
Blank No: V9981

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	108	86 - 115	81 - 117
Bromofluorobenzene	88	76 - 114	74 - 121
1,2-Dichloroethane d4	94	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31448qc2
Units: ug/L
Date: April 28, 1993

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MSD No. 31448-6

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	Spike Added (SA)	%R	RPD
1,1-DCE	ND	55	50	110	55	50	110	0.0
TCE	ND	53	50	106	52	50	104	1.9
Chloro-benzene	ND	54	50	108	53	50	106	1.9
Toluene	ND	61	50	122	60	50	120	1.7
Benzene	14	66	50	104	64	50	100	3.1

RPD = Relative Percent Difference

$$= [(MS\%R - MSD\%R) / ((MS\%R + MSD\%R) / 2)] \times 100$$

% R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

Advisory Limits:

	RPD	% RECOVERY
1,1-Dichloroethene	22	59 - 172
Trichloroethene	24	62 - 137
Chlorobenzene	21	60 - 133
Toluene	21	59 - 139
Benzene	21	66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 1 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31448qc3
Units: ug/L
Date: April 28, 1993
Blank No: SBLK94-S8470

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 2 of 3

Client: Burlington Environmental, Technical Services
 Lab No: 31448qc3
 Units: ug/L
 Date: April 28, 1993
 Blank No: SBLK94-S8470

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	15	10	
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Chrysene	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

PQL - Practical Quantitation Limit
 ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 3 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31448qc3
Date: April 28, 1993
Blank No: SBLK94-S8470

SEMIVOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d5	76	35 - 114	23 - 120
2-Fluorobiphenyl	64	43 - 116	30 - 115
p-Terphenyl-d14	98	33 - 141	18 - 137
Phenol-d6	26	10 - 94	24 - 113
2-Fluorophenol	51	21 - 100	25 - 121
2,4,6-TBP	66	10 - 123	19 - 122

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Client Name: Burlington Environmental, Technical Services
Lab No: 31448qc4
Date: April 28, 1993

SEMI-VOLATILE ORGANICS

COMPOUND	SPIKE (ug/L)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD	FLAGS
Phenol	100	ND	20	20	21	21	4.9	
2-Chlorophenol	100	ND	59	59	60	60	0.17	
1,4-Dichlorobenzene	100	ND	57	57	57	57	0.0	
N-nitrosodi-n-Propylamine	100	ND	78	78	78	78	0.0	
1,2,4-Trichlorobenzene	100	ND	58	58	61	61	5.0	
4-Chloro-3-Methylphenol	100	ND	58	58	59	59	7.1	
Acenaphthene	100	7.3	78	71	77	70	1.3	
4-Nitrophenol	100	ND	17	17	17	17	0.0	
2,4 Dinitrotoluene	100	ND	69	69	67	67	2.9	
Pentachlorophenol	100	ND	71	71	64	64	10.0	
Pyrene	100	ND	78	78	77	77	1.3	

RPD = Relative Percent Difference

% REC = Percent Recovery

ADVISORY LIMITS:

	<u>RPD</u>	<u>% RECOVERY</u>
Phenol	42	12 - 89
2-Chlorophenol	40	27 - 123
1,4-Dichlorobenzene	28	36 - 97
N-nitrosodi-n-Propylamine	38	41 - 116
1,2,4-Trichlorobenzene	28	39 - 98
4-Chloro-3-Methylphenol	42	23 - 97
Acenaphthene	31	46 - 118
4-Nitrophenol	50	10 - 80
2,4 Dinitrotoluene	38	24 - 96
Pentachlorophenol	50	9 - 103
Pyrene	31	26 - 127

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

TPH by Method 418.1

Client: Burlington Environmental, Technical Services
Lab No: 31448qc5
Matrix: Water
Units: mg/L
Date: April 28, 1993

METHOD BLANK

Parameter	Result	PQL
Total Petroleum Hydrocarbons	ND	1.0

ND - Not Detected

PQL - Practical Quantitation Limit

BLANK SPIKE RECOVERY

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
Total Petroleum Hydrocarbons	8.7	10	87	8.7	10	87	0.0	

%R = Percent Recovery
= $[(BS / SA) \times 100]$

RPD = Relative Percent Difference
= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31448qc6
Matrix: Water
Units: mg/L
Date: April 28, 1993

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MS / MSD No. 31448-6

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	RPD
Total Petroleum Fuel Hydrocarbons	1.6	43	40.2	103	43	0.0

%R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

RPD = Relative Percent Difference

$$= [(MS - MSD) / ((MS + MSD) / 2)] \times 100$$

BLANK SPIKE RECOVERY

BS No. 029R0101.D

Parameter	Spike Added	Spike Recovered	%R
Total Petroleum Fuel Hydrocarbons	402	408	101.5

%R = Percent Recovery

$$= [(BS - SR) / SA] \times 100$$

SOUND ANALYTICAL SERVICES, INC. SERVICES, T

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31448qc6
Matrix: Water
Units: mg/L
Date: April 28, 1993

METHOD BLANK

Blank No. 028R0101.D

Parameter	Result	PQL
Total Petroleum Fuel Hydrocarbons	ND	0.75
<u>SURROGATE RECOVERY%</u> 1-chlorooctane o-terphenyl	75 110	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

WTPH-HCID

Client: Burlington Environmental, Technical Services
Lab No: 31448qc7
Units: mg/kg
Date: April 28, 1993

METHOD BLANK

Blank No. 003F0101.D

Parameter	Result	Flags
Gasoline (C ₇ -C ₁₂)	< 20	
Diesel (>C ₁₂ -C ₂₄)	< 50	
Heavy Petroleum Oil (C ₂₄ ⁺)	< 100	
<u>SURROGATE RECOVERY, %</u>		
1-chlorooctane	95	
o-terphenyl	92	

SOUND ANALYTICAL SERVICES, INC. SERVICES, IN

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

Specific Gravity

Client: Burlington Environmental, Technical Services
Lab No: 31448qc8
Matrix: Oil
Units: mg/kg
Date: April 28, 1993

DUPLICATE

Dup. No. 31448-8

Parameter	Sample (S)	Duplicate (D)	RPD
Specific Gravity	0.8745	0.8735	0.1

RPD = Relative Percent Difference
= $[(S - D) / ((S + D) / 2)] \times 100$

METHOD BLANK

Parameter	Result
Specific Gravity	1.0016

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.



CHAIN-OF-CUSTODY RECORD

C.O.C. SERIAL NO. 6287

[illegible]

RECEIVED BY

SIGNATURE		DATE	TIME	SIGNATURE		DATE	TIME
<i>[Signature]</i>		4-15-93	0800	<i>[Signature]</i>		4-15	9:35
<i>[Signature]</i>		4-15-93	1230P	<i>[Signature]</i>		4/15	12:30
SHIPPING NOTES				LAB NOTES			

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

RECEIVED

MAY 19 1993

Burlington Environmental Inc.
Technical Services

DATE: May 17, 1993

TO: David Broten, Burlington Environmental Engineering

PROJECT NAME: Pier 91

PROJECT NUMBER: 624878-7306

LABORATORY NUMBER: 31428

Enclosed are one original and one copy of the Tier II data deliverables package for Laboratory Work Order Number 31428. The samples were received for analysis at Sound Analytical Services, Inc., on April 14 and 19, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,



Andrew J. Riddell
Project Manager

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

May 17, 1993

TO: Burlington Environmental Engineering

PROJECT NUMBER: 624878-7306

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31428

The samples were taken on 4/13/93 and 4/14/93 and were received at Sound on 4/14/93. The samples were analyzed for Volatile Organics in accordance with EPA SW-846 Method 8240, Semivolatile Organics in accordance with EPA SW-846 Method 8270, Total Petroleum Hydrocarbons by EPA Method 418.1 modified for soil, and Total Petroleum Fuel Hydrocarbons by EPA Method 8015 modified. Three oil samples were qualitatively screened for total petroleum fuel hydrocarbons in accordance with WA State DOE Method WTPH-HCID. The densities of the oil samples were determined in accordance with Standard Methods for the Examination of Water and Wastewater (16th Ed.) Method 213 E.

VOLATILE ORGANICS

Samples 31428-1 through 31428-4 were analyzed on 4/16/93 and 4/19/93. Methylene chloride was detected in the method blanks at levels above the IDL. Results reported for methylene chloride in the associated samples were flagged B to indicate this. All QC parameters were within acceptance limits.

SEMIVOLATILE ORGANICS

Samples 31428-1 and 31428-3 were extracted on 4/16/93 and analyzed on 4/20/93. Sample 31428-2 was extracted on 4/20/93 and analyzed on 4/20/93. Di-n-butylphthalate was detected above the IDL in the method blank associated with sample 31428-2. The result reported for di-n-butylphthalate was flagged B to indicate this. All QC parameters were within acceptance limits.

TOTAL PETROLEUM FUEL HYDROCARBONS

Samples 31428-1 through 31428-3 were extracted on 4/21/93 and analyzed on 4/22/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

TOTAL PETROLEUM HYDROCARBONS

Samples 31428-1 through 31428-3 were extracted on 4/19/93 and analyzed on 4/20/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

PROJECT NUMBER: 624878-7306

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31428

HYDROCARBON IDENTIFICATION

Samples 31428-5 through 31428-7 were extracted on 4/16/93 and analyzed on 4/20/93. No contamination above the PQL was present in the method blank.

SPECIFIC GRAVITY

The specific gravities for samples 31428-5 through 31428-7 were determined on 4/16/93.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Burlington Environmental, Date: April 27, 1993
Technical Services

Report On: Analysis of Oil & Water Lab No.: 31428
Page 1 of 23

IDENTIFICATION:

Samples received on 04-14-93
Project: 624878-7306 Pier 91

ANALYSIS:

Lab Sample No. 31428-1
Matrix: Water

Client ID: CP-117-0493

Volatile Organics by Method 8240
Date Analyzed: 4-16-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	400	J B1
Bromomethane	ND	400	
Vinyl Chloride	ND	400	
Chloroethane	210	400	
Methylene Chloride	300	200	
Acetone	ND	2,000	
Carbon Disulfide	ND	200	
1,1-Dichloroethene	ND	200	
1,1-Dichloroethane	270	200	
1,2-Dichloroethene (Total)	ND	200	
Chloroform	ND	200	
1,2-Dichloroethane	ND	200	
2-Butanone	ND	1,000	
1,1,1-Trichloroethane	ND	200	
Carbon Tetrachloride	ND	200	
Vinyl Acetate	ND	1,000	
Bromodichloromethane	ND	200	
1,2-Dichloropropane	ND	200	
Cis-1,3-Dichloropropene	ND	200	
Trichloroethene	ND	200	
Dibromochloromethane	ND	200	
1,1,2-Trichloroethane	ND	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 2 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-1
 Matrix: Water

Client ID: CP-117-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	28	200	J
Trans-1,3-Dichloropropene	ND	200	
Bromoform	ND	200	
4-Methyl-2-Pentanone	ND	1,000	
2-Hexanone	ND	200	
Tetrachloroethene	ND	200	
1,1,2,2-Tetrachloroethane	ND	200	
Toluene	1,800	200	
Chlorobenzene	ND	200	
Ethyl Benzene	4,100	200	
Styrene	ND	200	
Total Xylenes	11,000	200	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	101	88 - 110	81 - 117
Bromofluorobenzene	102	86 - 115	74 - 121
1,2-Dichloroethane-D4	106	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 3 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-1
 Matrix: Water

Client ID: CP-117-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-16-93
 Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	220	
bis(2-Chloroethyl) ether	ND	220	
2-Chlorophenol	ND	220	
1,3-Dichlorobenzene	ND	220	
1,4-Dichlorobenzene	ND	220	
Benzyl Alcohol	ND	450	
1,2-Dichlorobenzene	ND	220	
2-Methylphenol	ND	220	
bis(2-Chloroisopropyl) ether	ND	220	
4-Methylphenol	190	220	J
N-Nitroso-Di-N-propylamine	ND	220	
Hexachloroethane	ND	220	
Nitrobenzene	ND	220	
Isophorone	ND	220	
2-Nitrophenol	ND	220	
2,4-Dimethylphenol	ND	220	
Benzoic Acid	ND	1100	
bis(2-Chloroethoxy) methane	ND	220	
2,4-Dichlorophenol	ND	220	
1,2,4-Trichlorobenzene	ND	220	
Naphthalene	57	220	J
4-Chloroaniline	ND	450	
Hexachlorobutadiene	ND	220	
4-Chloro-3-methylphenol	ND	450	

ND - Not Detected
 PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services

Project: 624878-7306 Pier 91

Page 4 of 23

Lab No. 31428

April 27, 1993

Lab Sample No. 31428-1
Matrix: Water

Client ID: CP-117-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	45	220	J
Hexachlorocyclopentadiene	ND	220	
2,4,6-Trichlorophenol	ND	220	
2,4,5-Trichlorophenol	ND	220	
2-Chloronaphthalene	ND	220	
2-Nitroaniline	ND	1100	
Dimethyl phthalate	ND	220	
Acenaphthylene	ND	220	
2,6-Dinitrotoluene	ND	220	
3-Nitroaniline	ND	1100	
Acenaphthene	ND	220	
2,4-Dinitrophenol	ND	1100	
4-Nitrophenol	ND	1100	
Dibenzofuran	ND	220	
2,4-Dinitrotoluene	ND	220	
Diethylphthalate	ND	220	
4-Chlorophenyl phenyl ether	ND	220	
Fluorene	ND	220	
4-Nitroaniline	ND	1100	
4,6-Dinitro-2-methylphenol	ND	1100	
N-Nitrosodiphenylamine	ND	220	
4-Bromophenyl phenyl ether	ND	220	
Hexachlorobenzene	ND	220	
Pentachlorophenol	ND	1100	
Phenanthrene	ND	220	
Anthracene	ND	220	
Di-n-butylphthalate	ND	220	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 5 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-1
 Matrix: Water

Client ID: CP-117-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	220	
Pyrene	ND	220	
Butyl benzyl phthalate	ND	220	
3,3'-Dichlorobenzidine	ND	450	
Benzo(a)anthracene	ND	220	
Chrysene	ND	220	
bis(2-ethylhexyl)phthalate	ND	220	
Di-n-octyl phthalate	ND	220	
Benzo(b)fluoranthene	ND	220	
Benzo(k)fluoranthene	ND	220	
Benzo(a)pyrene	ND	220	
Indeno(1,2,3-cd)pyrene	ND	220	
Dibenz(a,h)anthracene	ND	220	
Benzo(g,h,i)perylene	ND	220	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	X8	35 - 114	23 - 120
2-Fluorobiphenyl	X8	43 - 116	30 - 115
p-Terphenyl-d ₁₄	X8	33 - 141	18 - 137
Phenol-d ₆	X8	10 - 94	24 - 113
2-Fluorophenol	X8	21 - 100	25 - 121
2,4,6-Tribromophenol	X8	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 6 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-1
Matrix: Water

Client ID: CP-117-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	36	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	74	0.75	X2
TPH as	Gasoline, Diesel		

SURROGATE RECOVERY, %

1-chlorooctane	108
o-terphenyl	112

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 7 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-2
Matrix: Water

Client ID: CP-118-0493

Volatile Organics by Method 8240
Date Analyzed: 4-19-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	20	
Bromomethane	ND	20	
Vinyl Chloride	ND	20	
Chloroethane	9.4	20	J
Methylene Chloride	19	10	B1
Acetone	4.0	100	J
Carbon Disulfide	ND	10	
1,1-Dichloroethene	ND	10	
1,1-Dichloroethane	8.6	10	J
1,2-Dichloroethene (Total)	ND	10	
Chloroform	ND	10	
1,2-Dichloroethane	ND	10	
2-Butanone	ND	50	
1,1,1-Trichloroethane	ND	10	
Carbon Tetrachloride	ND	10	
Vinyl Acetate	ND	50	
Bromodichloromethane	ND	10	
1,2-Dichloropropane	ND	10	
Cis-1,3-Dichloropropene	ND	10	
Trichloroethene	ND	10	
Dibromochloromethane	ND	10	
1,1,2-Trichloroethane	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 8 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-2
 Matrix: Water

Client ID: CP-118-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	18	10	J
Trans-1,3-Dichloropropene	ND	10	
Bromoform	ND	10	
4-Methyl-2-Pentanone	ND	50	
2-Hexanone	ND	10	
Tetrachloroethene	ND	10	
1,1,2,2-Tetrachloroethane	ND	10	
Toluene	ND	10	
Chlorobenzene	ND	10	
Ethyl Benzene	5.0	10	
Styrene	ND	10	
Total Xylenes	10	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	99	88 - 110	81 - 117
Bromofluorobenzene	89	86 - 115	74 - 121
1,2-Dichloroethane-D4	107	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 9 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-2
 Matrix: Water

Client ID: CP-118-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-20-93
 Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	18	
bis(2-Chloroethyl) ether	ND	18	
2-Chlorophenol	ND	18	
1,3-Dichlorobenzene	ND	18	
1,4-Dichlorobenzene	ND	18	
Benzyl Alcohol	ND	36	
1,2-Dichlorobenzene	ND	18	
2-Methylphenol	ND	18	
bis(2-Chloroisopropyl)ether	ND	18	
4-Methylphenol	ND	18	
N-Nitroso-Di-N-propylamine	ND	18	
Hexachloroethane	ND	18	
Nitrobenzene	ND	18	
Isophorone	ND	18	
2-Nitrophenol	ND	18	
2,4-Dimethylphenol	ND	18	
Benzoic Acid	ND	91	
bis(2-Chloroethoxy)methane	ND	18	
2,4-Dichlorophenol	ND	18	
1,2,4-Trichlorobenzene	ND	18	
Naphthalene	18	18	J
4-Chloroaniline	ND	36	
Hexachlorobutadiene	ND	18	
4-Chloro-3-methylphenol	76	36	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 10 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-2
 Matrix: Water

Client ID: CP-118-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	130	18	
Hexachlorocyclopentadiene	ND	18	
2,4,6-Trichlorophenol	ND	18	
2,4,5-Trichlorophenol	ND	18	
2-Chloronaphthalene	ND	18	
2-Nitroaniline	ND	91	
Dimethyl phthalate	ND	18	
Acenaphthylene	ND	18	
2,6-Dinitrotoluene	ND	18	
3-Nitroaniline	ND	91	
Acenaphthene	4.0	18	J
2,4-Dinitrophenol	ND	91	
4-Nitrophenol	ND	91	
Dibenzofuran	3.9	18	J
2,4-Dinitrotoluene	ND	18	
Diethylphthalate	ND	18	
4-Chlorophenyl phenyl ether	ND	18	
Fluorene	9.5	18	J
4-Nitroaniline	ND	91	
4,6-Dinitro-2-methylphenol	ND	91	
N-Nitrosodiphenylamine	ND	18	
4-Bromophenyl phenyl ether	ND	18	
Hexachlorobenzene	ND	18	
Pentachlorophenol	ND	91	
Phenanthrene	5.7	18	J
Anthracene	ND	18	
Di-n-butylphthalate	13	18	B1, J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 11 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-2
 Matrix: Water

Client ID: CP-118-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	18	
Pyrene	ND	18	
Butyl benzyl phthalate	ND	18	
3,3'-Dichlorobenzidine	ND	36	
Benzo(a)anthracene	ND	18	
Chrysene	ND	18	
bis(2-ethylhexyl)phthalate	ND	18	
Di-n-octyl phthalate	ND	18	
Benzo(b)fluoranthene	ND	18	
Benzo(k)fluoranthene	ND	18	
Benzo(a)pyrene	ND	18	
Indeno(1,2,3-cd)pyrene	ND	18	
Dibenz(a,h)anthracene	ND	18	
Benzo(g,h,i)perylene	ND	18	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	69	35 - 114	23 - 120
2-Fluorobiphenyl	91	43 - 116	30 - 115
p-Terphenyl-d ₁₄	91	33 - 141	18 - 137
Phenol-d ₆	22	10 - 94	24 - 113
2-Fluorophenol	45	21 - 100	25 - 121
2,4,6-Tribromophenol	97	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 12 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-2
Matrix: Water

Client ID: CP-118-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	34	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	26	0.75	X2
TPH as	Gasoline, Diesel		

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	109
o-terphenyl	133

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 13 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-3
 Matrix: Water

Client ID: CP-119-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-19-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1, J J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	140	10	
Methylene Chloride	2.5	5	
Acetone	13	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	33	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	J
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	1.9	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 14 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-3
 Matrix: Water

Client ID: CP-119-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	45	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	35	5	
Chlorobenzene	ND	5	
Ethyl Benzene	26	5	
Styrene	ND	5	
Total Xylenes	100	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	99	88 - 110	81 - 117
Bromofluorobenzene	97	86 - 115	74 - 121
1,2-Dichloroethane-D4	99	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 15 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-3
 Matrix: Water

Client ID: CP-119-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-16-93
 Date Analyzed: 4-20-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	100	
bis(2-Chloroethyl) ether	ND	100	
2-Chlorophenol	ND	100	
1,3-Dichlorobenzene	ND	100	
1,4-Dichlorobenzene	ND	100	
Benzyl Alcohol	ND	210	
1,2-Dichlorobenzene	ND	100	
2-Methylphenol	ND	100	
bis(2-Chloroisopropyl) ether	ND	100	
4-Methylphenol	ND	100	
N-Nitroso-Di-N-propylamine	ND	100	
Hexachloroethane	ND	100	
Nitrobenzene	ND	100	
Isophorone	ND	100	
2-Nitrophenol	ND	100	
2,4-Dimethylphenol	ND	100	
Benzoic Acid	ND	520	
bis(2-Chloroethoxy)methane	ND	100	
2,4-Dichlorophenol	ND	100	
1,2,4-Trichlorobenzene	ND	100	
Naphthalene	120	100	
4-Chloroaniline	ND	210	
Hexachlorobutadiene	ND	100	
4-Chloro-3-methylphenol	ND	210	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 16 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-3
 Matrix: Water

Client ID: CP-119-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	260	100	
Hexachlorocyclopentadiene	ND	100	
2,4,6-Trichlorophenol	ND	100	
2,4,5-Trichlorophenol	ND	100	
2-Chloronaphthalene	ND	100	
2-Nitroaniline	ND	520	
Dimethyl phthalate	ND	100	
Acenaphthylene	ND	100	
2,6-Dinitrotoluene	ND	100	
3-Nitroaniline	ND	520	
Acenaphthene	ND	100	
2,4-Dinitrophenol	ND	520	
4-Nitrophenol	ND	520	
Dibenzofuran	ND	100	
2,4-Dinitrotoluene	ND	100	
Diethylphthalate	ND	100	
4-Chlorophenyl phenyl ether	ND	100	
Fluorene	22	100	J
4-Nitroaniline	ND	520	
4,6-Dinitro-2-methylphenol	ND	520	
N-Nitrosodiphenylamine	ND	100	
4-Bromophenyl phenyl ether	ND	100	
Hexachlorobenzene	ND	100	
Pentachlorophenol	ND	520	
Phenanthrene	33	100	J
Anthracene	ND	100	
Di-n-butylphthalate	ND	100	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 17 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-3
 Matrix: Water

Client ID: CP-119-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	100	
Pyrene	ND	100	
Butyl benzyl phthalate	ND	100	
3,3'-Dichlorobenzidine	ND	210	
Benzo(a)anthracene	ND	100	
Chrysene	ND	100	
bis(2-ethylhexyl)phthalate	ND	100	
Di-n-octyl phthalate	ND	100	
Benzo(b)fluoranthene	ND	100	
Benzo(k)fluoranthene	ND	100	
Benzo(a)pyrene	ND	100	
Indeno(1,2,3-cd)pyrene	ND	100	
Dibenz(a,h)anthracene	ND	100	
Benzo(g,h,i)perylene	ND	100	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	68	35 - 114	23 - 120
2-Fluorobiphenyl	115	43 - 116	30 - 115
p-Terphenyl-d ₁₄	104	33 - 141	18 - 137
Phenol-d ₆	25	10 - 94	24 - 113
2-Fluorophenol	56	21 - 100	25 - 121
2,4,6-Tribromophenol	92	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 18 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-3
Matrix: Water

Client ID: CP-119-0493

TPH Per EPA Method 418.1
Date Extracted: 4-19-93
Date Analyzed: 4-20-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	190	10	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-21-93
Date Analyzed: 4-22-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	100	0.75	X2
TPH as	Gasoline, Diesel		

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	116
o-terphenyl	130

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 19 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-4
 Matrix: Water

Client ID: Trip Blank #7

Volatile Organics by Method 8240
 Date Analyzed: 4-16-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	6.5	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 20 of 23
 Lab No. 31428
 April 27, 1993

Lab Sample No. 31428-4
 Matrix: Water

Client ID: Trip Blank #7

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	107	88 - 110	81 - 117
Bromofluorobenzene	87	86 - 115	74 - 121
1,2-Dichloroethane-D4	103	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

RECEIVED

AUG 4 1993

Burlington Environmental Inc.
Technical Services

Andrew Riddell
Project Manager
Sound Analytical Services, Inc.
4813 Pacific Hwy East
Tacoma, Washington 98424

August 3, 1993

James Peale
Burlington Environmental
Technical Services
P.O. Box 3552
Seattle, Washington 98124

Dear Mr. Peale:

Please find enclosed page 21 of 23 from our lab report #31428 dated April 27, 1993. This page has been revised to more accurately reflect the sample matrix and to clarify the reported specific gravity result.

If there are any further questions, please do not hesitate to call me at (206) 922-2310.

Sincerely,



Andrew J. Riddell

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 21 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-5
Matrix: Water/Oil

Client ID: CP-117-0493

WTPH-HCID
Date Extracted: 4-16-93
Date Analyzed: 4-20-93

<u>Parameters</u>	<u>Concentration, mg/kg</u>	<u>Flag</u>
Gasoline (C7 - C12)	< 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	< 100	

SURROGATE RECOVERY, %

1-chlorooctane	107
o-terphenyl	93

ND - Not Detected
PQL - Practical Quantitation Limit

<u>Parameter</u>	<u>Result</u>
Specific Gravity*	1.0055

* Due to an insufficient quantity of free oil product, specific gravity determination was performed on the aqueous portion of this sample.

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 21 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-5
Matrix: Oil

Client ID: CP-117-0493

WTPH-HCID
Date Extracted: 4-16-93
Date Analyzed: 4-20-93

<u>Parameters</u>	<u>Concentration, mg/kg</u>	<u>Flag</u>
Gasoline (C7 - C12)	< 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	< 100	

SURROGATE RECOVERY, %

1-chlorooctane	107
o-terphenyl	93

ND - Not Detected
PQL - Practical Quantitation Limit

<u>Parameter</u>	<u>Result</u>
Specific Gravity	1.0055

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 22 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-6
Matrix: Oil

Client ID: CP-118-0493

WTPH-HCID
Date Extracted: 4-16-93
Date Analyzed: 4-20-93

<u>Parameters</u>	<u>Concentration, mg/kg</u>	<u>Flag</u>
Gasoline (C7 - C12)	> 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	< 100	

SURROGATE RECOVERY, %

1-chlorooctane	76	
o-terphenyl	360	X10

ND - Not Detected
PQL - Practical Quantitation Limit

<u>Parameter</u>	<u>Result</u>
Specific Gravity	0.8849

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 23 of 23
Lab No. 31428
April 27, 1993

Lab Sample No. 31428-7
Matrix: Oil

Client ID: CP-119-0493

WTPH-HCID
Date Extracted: 4-16-93
Date Analyzed: 4-20-93

<u>Parameters</u>	<u>Concentration, mg/kg</u>	<u>Flag</u>
Gasoline (C7 - C12)	> 20	
Diesel (> C12 - C24)	> 50	
Heavy Oil (C24+)	> 100	

SURROGATE RECOVERY, %

1-chlorooctane	48	X9
o-terphenyl	133	

ND - Not Detected
PQL - Practical Quantitation Limit

<u>Parameter</u>	<u>Result</u>
Specific Gravity	0.9080

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31428qc5
Units: ug/L
Date: April 27, 1993
Blank No: V9909
Date Analyzed: 4-16-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	5.3	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31428qc5
Date: April 27, 1993
Blank No: V9909
Date Analyzed: 4-16-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	106	86 - 115	81 - 117
Bromofluorobenzene	86	76 - 114	74 - 121
1,2-Dichloroethane d4	101	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31428qc6
Units: ug/L
Date: April 27, 1993
Blank No: V9958
Date Analyzed: 4-19-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	4.2	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31428qc6
Date: April 27, 1993
Blank No: V9958
Date Analyzed: 4-19-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	102	86 - 115	81 - 117
Bromofluorobenzene	87	76 - 114	74 - 121
1,2-Dichloroethane d4	103	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31428qc7
Units: ug/L
Date: April 27, 1993

Date Analyzed: 4-16-93

BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	48	50	96	49	50	98	4.1	
TCE	47	50	94	48	50	96	2.1	
Chloro-benzene	48	50	96	49	50	98	2.1	
Toluene	50	50	100	50	50	100	0.0	
Benzene	47	50	94	49	50	98	4.2	

%R = Percent Recovery

= $[(BS / SA) \times 100]$

RPD = Relative Percent Difference

= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

ADVISORY LIMITS

RPD

% RECOVERY

1,1-Dichloroethene

22

59 - 172

Trichloroethene

24

62 - 137

Chlorobenzene

21

60 - 133

Toluene

21

59 - 139

Benzene

21

66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31428qc8
Units: ug/L
Date: April 27, 1993

Date Analyzed: 4-19-93

BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	52	50	104	53	50	106	1.9	
TCE	50	50	100	55	50	110	9.5	
Chloro- benzene	51	50	102	54	50	108	5.7	
Toluene	54	50	108	59	50	118	8.8	
Benzene	50	50	100	54	50	108	7.7	

%R = Percent Recovery

= $[(BS / SA) \times 100]$

RPD = Relative Percent Difference

= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

ADVISORY LIMITS

1,1-Dichloroethene
Trichloroethene
Chlorobenzene
Toluene
Benzene

RPD

22
24
21
21
21

% RECOVERY

59 - 172
62 - 137
60 - 133
59 - 139
66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 1 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31428qc9
Units: ug/L
Date: April 27, 1993
Blank No: SBLK92-S8459
Date Analyzed: 4-16-93

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 2 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31428qc9
Units: ug/L
Date: April 27, 1993
Blank No: SBLK92-S8459
Date Analyzed: 4-16-93

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	ND	10	
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Chrysene	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 3 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31428qc9
Date: April 27, 1993
Blank No: SBLK92-S8459
Date Analyzed: 4-16-93

SEMIVOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d5	78	35 - 114	23 - 120
2-Fluorobiphenyl	61	43 - 116	30 - 115
p-Terphenyl-d14	76	33 - 141	18 - 137
Phenol-d6	29	10 - 94	24 - 113
2-Fluorophenol	56	21 - 100	25 - 121
2,4,6-TBP	77	10 - 123	19 - 122

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 1 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31428q10
Units: ug/L
Date: April 27, 1993
Blank No: SBLK94-S8470
Date Analyzed: 4-20-93

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 2 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31428q10
Units: ug/L
Date: April 27, 1993
Blank No: SBLK94-S8470
Date Analyzed: 4-20-93

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	15	10	
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Chrysene	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 3 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31428q10
Date: April 27, 1993
Blank No: SBLK94-S8470
Date Analyzed: 4-20-93

SEMIVOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d5	76	35 - 114	23 - 120
2-Fluorobiphenyl	64	43 - 116	30 - 115
p-Terphenyl-d14	98	33 - 141	18 - 137
Phenol-d6	26	10 - 94	24 - 113
2-Fluorophenol	51	21 - 100	25 - 121
2,4,6-TBP	66	10 - 123	19 - 122

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Client Name: Burlington Environmental, Technical Services
Lab No: 31428q11
Date: April 27, 1993
Date Analyzed: 4-16-93

SEMI-VOLATILE ORGANICS

COMPOUND	SPIKE (ug/L)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD	FLAGS
Phenol	100	ND	26	26	27	27	3.5	
2-Chlorophenol	100	ND	56	56	61	61	9.6	
1,4-Dichlorobenzene	100	ND	57	57	53	53	6.5	
N-nitrosodi-n-Propylamine	100	ND	62	62	59	59	5.6	
1,2,4-Trichlorobenzene	100	ND	62	62	59	59	6.0	
4-Chloro-3-Methylphenol	100	ND	51	51	54	54	5.7	
Acenaphthene	100	ND	57	57	55	55	3.8	
4-Nitrophenol	100	ND	21	21	22	22	1.4	
2,4 Dinitrotoluene	100	ND	58	58	52	52	12	
Pentachlorophenol	100	ND	57	57	62	62	8.4	
Pyrene	100	ND	67	67	65	65	2.9	

RPD = Relative Percent Difference

% REC = Percent Recovery

ND - Not Detected

ADVISORY LIMITS:

	RPD	% RECOVERY
Phenol	42	12 - 89
2-Chlorophenol	40	27 - 123
1,4-Dichlorobenzene	28	36 - 97
N-nitrosodi-n-Propylamine	38	41 - 116
1,2,4-Trichlorobenzene	28	39 - 98
4-Chloro-3-Methylphenol	42	23 - 97
Acenaphthene	31	46 - 118
4-Nitrophenol	50	10 - 80
2,4 Dinitrotoluene	38	24 - 96
Pentachlorophenol	50	9 - 103
Pyrene	31	26 - 127

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Client Name: Burlington Environmental, Technical Services
 Lab No: 31428q12
 Date: April 27, 1993
 Date Analyzed: 4-20-93

SEMI-VOLATILE ORGANICS

COMPOUND	SPIKE (ug/L)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD	FLAGS
Phenol	100	ND	20	20	21	21	4.9	
2-Chlorophenol	100	ND	59	59	60	60	0.17	
1,4-Dichlorobenzene	100	ND	57	57	57	57	0.0	
N-nitrosodi-n-Propylamine	100	ND	78	78	78	78	0.0	
1,2,4-Trichlorobenzene	100	ND	58	58	61	61	5.0	
4-Chloro-3-Methylphenol	100	ND	58	58	59	59	1.7	
Acenaphthene	100	7.3	78	78	77	70	1.3	
4-Nitrophenol	100	ND	17	17	17	17	0.0	
2,4 Dinitrotoluene	100	ND	69	69	67	67	2.9	
Pentachlorophenol	100	ND	71	71	64	64	10	
Pyrene	100	ND	78	78	77	77	1.3	

RPD = Relative Percent Difference

% REC = Percent Recovery

ND - Not Detected

ADVISORY LIMITS:

	RPD	% RECOVERY
Phenol	42	12 - 89
2-Chlorophenol	40	27 - 123
1,4-Dichlorobenzene	28	36 - 97
N-nitrosodi-n-Propylamine	38	41 - 116
1,2,4-Trichlorobenzene	28	39 - 98
4-Chloro-3-Methylphenol	42	23 - 97
Acenaphthene	31	46 - 118
4-Nitrophenol	50	10 - 80
2,4 Dinitrotoluene	38	24 - 96
Pentachlorophenol	50	9 - 103
Pyrene	31	26 - 127

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31428qc2
Matrix: Water
Units: mg/L
Date: April 27, 1993

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MS/MSD No. 31428-1

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	RPD
Total Petroleum Fuel Hydrocarbons	74	120	40.2	114	130	8.0

%R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

RPD = Relative Percent Difference

$$= [(MS - MSD) / ((MS + MSD) / 2)] \times 100$$

BLANK SPIKE RECOVERY

BS No. 029R0101.D

Parameter	Spike Added	Spike Recovered	%R
Total Petroleum Fuel Hydrocarbons	402	408	101.5

%R = Percent Recovery

$$= [(BS - SR) / SA] \times 100$$

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31428qc2
Units: mg/L
Date: April 27, 1993

METHOD BLANK

Blank No. 023R0101.D

Parameter	Result	PQL
Total Petroleum Fuel Hydrocarbons	ND	0.75
<u>SURROGATE RECOVERY%</u> 1-chlorooctane o-terphenyl	75 110	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

WTPH-HCID

Client: Burlington Environmental, Technical Services
Lab No: 31428qc1
Units: mg/kg
Date: April 27, 1993

METHOD BLANK

Parameter	Result	Flags
Gasoline (C ₇ -C ₁₂)	< 20	
Diesel (>C ₁₂ -C ₂₄)	< 50	
Heavy Petroleum Oil (C ₂₄ +)	< 100	
<u>SURROGATE RECOVERY, %</u>		
1-chlorooctane	95	
o-terphenyl	92	

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

TPH by Method 418.1

Client: Burlington Environmental, Technical Services
Lab No: 31428qc4
Matrix: Water
Units: mg/L
Date: April 27, 1993

METHOD BLANK

Parameter	Result	PQL
Total Petroleum Hydrocarbons	ND	1.0

ND - Not Detected

PQL - Practical Quantitation Limit

BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
Total Petroleum Hydrocarbons	8.7	10	87	8.7	10	87	0.0	

%R = Percent Recovery
= $[(BS / SA) \times 100]$

RPD = Relative Percent Difference
= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

Specific Gravity

Client: Burlington Environmental, Technical Services
Lab No: 31428qc3
Date: April 27, 1993

METHOD BLANK

Parameter	Result
Specific Gravity	1.0012

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.



CHAIN-OF-CUSTODY RECORD

C.O.C. SERIAL NO. 6288

RELINQUISHED BY			RECEIVED BY		
SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME
<i>[Signature]</i>	4-17-93	0830	<i>[Signature]</i>	4-19	10:50 A
<i>[Signature]</i>	4-19-93	12:00 P	<i>[Signature]</i>	4/19	12:20 P
SHIPPING NOTES			LAB NOTES		



210 West Sand Bank Road
P.O. Box 330
Columbia, IL 62236-0330
618/281-7173
618/281-5120 FAX

C.O.C. SERIAL NO. 6326

[illegible]

RELINQUISHED BY

RECEIVED BY

SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME
<i>[Signature]</i>	4-14-93	0730	<i>[Signature]</i>	4-14-93	10:11
<i>[Signature]</i>	4-14	1:20 P	<i>[Signature]</i>	4/14	1:20

SHIPPING NOTES

LAB NOTES

LAB NOTES
Sample C P-118-0493 for 8270 (1)
Broken during Transport. 4/14/93 on

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

RECEIVED

MAY 25 1993

Burlington Environmental Inc.
Technical Services

DATE: May 20, 1993

TO: David Broten, Burlington Environmental Technical Services

PROJECT NAME: Pier 91

PROJECT NUMBER: 624878-7306

LABORATORY NUMBER: 31308

Enclosed are one original and one copy of the Tier II data deliverables package for Laboratory Work Order Number 31308. The samples were received for analysis at Sound Analytical Services, Inc., on April 8, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,



Andrew J. Riddell
Project Manager

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

May 20, 1993

TO: Burlington Environmental Engineering

PROJECT NUMBER: 624878-7306

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31308

The samples were taken on 4/07/93 and were received at Sound on 4/08/93. The samples were analyzed for Volatile Organics in accordance with EPA SW-846 Method 8240, Semivolatile Organics in accordance with EPA SW-846 Method 8270, Total Petroleum Hydrocarbons by EPA Method 418.1 modified for soil, and Total Petroleum Fuel Hydrocarbons by EPA Method 8015 modified.

VOLATILE ORGANICS

Samples 31308-1 through 31308-6 were analyzed on 4/14/93. Methylene chloride and acetone were detected in the method blanks at levels above the IDL. Results reported for these compounds in the associated samples were flagged B to indicate this. All QC parameters were within acceptance limits.

SEMIVOLATILE ORGANICS

Samples 31308-1 through 31308-5 were extracted on 4/09/93 and analyzed on 4/12/93. No compounds were detected in the method blank above the IDL. All QC parameters were within acceptance limits.

TOTAL PETROLEUM FUEL HYDROCARBONS

Samples 31308-1 through 31308-5 were extracted on 4/12/93 and analyzed on 4/14/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

TOTAL PETROLEUM HYDROCARBONS

Samples 31308-1 through 31308-5 were extracted on 4/12/93 and analyzed on 4/13/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Burlington Environmental, Date: April 15, 1993
Technical Services

Report On: Analysis of Water

Lab No.: 31308

Page 1 of 32

IDENTIFICATION:

Samples received on 04-08-93

Project: 624878-7306 Pier 91

ANALYSIS:

Lab Sample No. 31308-1

Client ID: CP-111-0493

Volatile Organics by Method 8240

Date Analyzed: 4-14-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	20	
Bromomethane	ND	20	
Vinyl Chloride	ND	20	
Chloroethane	4.2	20	J
Methylene Chloride	62	10	B1
Acetone	2.8	100	B1, J
Carbon Disulfide	ND	10	
1,1-Dichloroethene	ND	10	
1,1-Dichloroethane	ND	10	
1,2-Dichloroethene (Total)	ND	10	
Chloroform	ND	10	
1,2-Dichloroethane	ND	10	
2-Butanone	ND	50	
1,1,1-Trichloroethane	ND	10	
Carbon Tetrachloride	ND	10	
Vinyl Acetate	ND	50	
Bromodichloromethane	ND	10	
1,2-Dichloropropane	ND	10	
Cis-1,3-Dichloropropene	ND	10	
Trichloroethene	4.6	10	J
Dibromochloromethane	ND	10	
1,1,2-Trichloroethane	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 2 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-1

Client ID: CP-111-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	10	
Trans-1,3-Dichloropropene	ND	10	
Bromoform	ND	10	
4-Methyl-2-Pentanone	ND	50	
2-Hexanone	ND	10	
Tetrachloroethene	ND	10	
1,1,2,2-Tetrachloroethane	ND	10	
Toluene	2.6	10	J
Chlorobenzene	ND	10	
Ethyl Benzene	2.0	10	J
Styrene	ND	10	
Total Xylenes	2.4	10	J

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	101	88 - 110	81 - 117
Bromofluorobenzene	93	86 - 115	74 - 121
1,2-Dichloroethane-D4	105	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 3 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-1

Client ID: CP-111-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	110	
bis(2-Chloroethyl) ether	ND	110	
2-Chlorophenol	ND	110	
1,3-Dichlorobenzene	ND	110	
1,4-Dichlorobenzene	ND	110	
Benzyl Alcohol	ND	210	
1,2-Dichlorobenzene	ND	110	
2-Methylphenol	ND	110	
bis(2-Chloroisopropyl)ether	ND	110	
4-Methylphenol	ND	110	
N-Nitroso-Di-N-propylamine	ND	110	
Hexachloroethane	ND	110	
Nitrobenzene	ND	110	
Isophorone	ND	110	
2-Nitrophenol	ND	110	
2,4-Dimethylphenol	ND	110	
Benzoic Acid	ND	530	
bis(2-Chloroethoxy)methane	ND	110	
2,4-Dichlorophenol	ND	110	
1,2,4-Trichlorobenzene	ND	110	
Naphthalene	ND	110	
4-Chloroaniline	ND	210	
Hexachlorobutadiene	ND	110	
4-Chloro-3-methylphenol	ND	210	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 4 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-1

Client ID: CP-111-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	110	
Hexachlorocyclopentadiene	ND	110	
2,4,6-Trichlorophenol	ND	110	
2,4,5-Trichlorophenol	ND	110	
2-Chloronaphthalene	ND	110	
2-Nitroaniline	ND	530	
Dimethyl phthalate	ND	110	
Acenaphthylene	ND	110	
2,6-Dinitrotoluene	ND	110	
3-Nitroaniline	ND	530	
Acenaphthene	ND	110	
2,4-Dinitrophenol	ND	530	
4-Nitrophenol	ND	530	
Dibenzofuran	ND	110	
2,4-Dinitrotoluene	ND	110	
Diethylphthalate	ND	110	
4-Chlorophenyl phenyl ether	ND	110	
Fluorene	ND	110	
4-Nitroaniline	ND	530	
4,6-Dinitro-2-methylphenol	ND	530	
N-Nitrosodiphenylamine	ND	110	
4-Bromophenyl phenyl ether	ND	110	
Hexachlorobenzene	ND	110	
Pentachlorophenol	ND	530	
Phenanthrene	ND	110	
Anthracene	ND	110	
Di-n-butylphthalate	ND	110	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 5 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-1

Client ID: CP-111-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	110	
Pyrene	ND	110	
Butyl benzyl phthalate	ND	110	
3,3'-Dichlorobenzidine	ND	210	
Benzo(a)anthracene	ND	110	
Chrysene	ND	110	
bis(2-ethylhexyl)phthalate	ND	110	
Di-n-octyl phthalate	ND	110	
Benzo(b)fluoranthene	ND	110	
Benzo(k)fluoranthene	ND	110	
Benzo(a)pyrene	ND	110	
Indeno(1,2,3-cd)pyrene	ND	110	
Dibenz(a,h)anthracene	ND	110	
Benzo(g,h,i)perylene	ND	110	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	63	35 - 114	23 - 120
2-Fluorobiphenyl	73	43 - 116	30 - 115
p-Terphenyl-d ₁₄	67	33 - 141	18 - 137
Phenol-d ₆	16	10 - 94	24 - 113
2-Fluorophenol	38	21 - 100	25 - 121
2,4,6-Tribromophenol	59	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 6 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-1

Client ID: CP-111-0493

TPH Per EPA Method 418.1
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	30	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 1-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	45	0.75	
TPH as	Diesel		

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	92
o-terphenyl	100

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 7 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-2

Client ID: CP-911-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-14-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	20	
Bromomethane	ND	20	
Vinyl Chloride	ND	20	
Chloroethane	3.8	20	J
Methylene Chloride	56	10	B1
Acetone	5.2	100	B1, J
Carbon Disulfide	ND	10	
1,1-Dichloroethene	ND	10	
1,1-Dichloroethane	ND	10	
1,2-Dichloroethene (Total)	ND	10	
Chloroform	ND	10	
1,2-Dichloroethane	ND	10	
2-Butanone	ND	50	
1,1,1-Trichloroethane	ND	10	
Carbon Tetrachloride	ND	10	
Vinyl Acetate	ND	50	
Bromodichloromethane	ND	10	
1,2-Dichloropropane	ND	10	
Cis-1,3-Dichloropropene	ND	10	
Trichloroethene	4.4	10	J
Dibromochloromethane	ND	10	
1,1,2-Trichloroethane	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 8 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-2

Client ID: CP-911-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	10	
Trans-1,3-Dichloropropene	ND	10	
Bromoform	ND	10	
4-Methyl-2-Pentanone	ND	50	
2-Hexanone	ND	10	
Tetrachloroethene	ND	10	
1,1,2,2-Tetrachloroethane	ND	10	
Toluene	2.8	10	J
Chlorobenzene	ND	10	
Ethyl Benzene	2.2	10	J
Styrene	ND	10	
Total Xylenes	2.6	10	J

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	100	88 - 110	81 - 117
Bromofluorobenzene	96	86 - 115	74 - 121
1,2-Dichloroethane-D4	106	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services

Project: 624878-7306 Pier 91

Page 9 of 32

Lab No. 31308

April 15, 1993

Lab Sample No. 31308-2

Client ID: CP-911-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	110	
bis(2-Chloroethyl) ether	ND	110	
2-Chlorophenol	ND	110	
1,3-Dichlorobenzene	ND	110	
1,4-Dichlorobenzene	ND	110	
Benzyl Alcohol	ND	210	
1,2-Dichlorobenzene	ND	110	
2-Methylphenol	ND	110	
bis(2-Chloroisopropyl) ether	ND	110	
4-Methylphenol	ND	110	
N-Nitroso-Di-N-propylamine	ND	110	
Hexachloroethane	ND	110	
Nitrobenzene	ND	110	
Isophorone	ND	110	
2-Nitrophenol	ND	110	
2,4-Dimethylphenol	ND	110	
Benzoic Acid	ND	530	
bis(2-Chloroethoxy) methane	ND	110	
2,4-Dichlorophenol	ND	110	
1,2,4-Trichlorobenzene	ND	110	
Naphthalene	ND	110	
4-Chloroaniline	ND	210	
Hexachlorobutadiene	ND	110	
4-Chloro-3-methylphenol	ND	210	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 10 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-2

Client ID: CP-911-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	110	
Hexachlorocyclopentadiene	ND	110	
2,4,6-Trichlorophenol	ND	110	
2,4,5-Trichlorophenol	ND	110	
2-Chloronaphthalene	ND	110	
2-Nitroaniline	ND	530	
Dimethyl phthalate	ND	110	
Acenaphthylene	ND	110	
2,6-Dinitrotoluene	ND	110	
3-Nitroaniline	ND	530	
Acenaphthene	ND	110	
2,4-Dinitrophenol	ND	530	
4-Nitrophenol	ND	530	
Dibenzofuran	ND	110	
2,4-Dinitrotoluene	ND	110	
Diethylphthalate	ND	110	
4-Chlorophenyl phenyl ether	ND	110	
Fluorene	ND	110	
4-Nitroaniline	ND	530	
4,6-Dinitro-2-methylphenol	ND	530	
N-Nitrosodiphenylamine	ND	110	
4-Bromophenyl phenyl ether	ND	110	
Hexachlorobenzene	ND	110	
Pentachlorophenol	ND	530	
Phenanthrene	ND	110	
Anthracene	ND	110	
Di-n-butylphthalate	ND	110	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 11 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-2

Client ID: CP-911-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	110	J
Pyrene	ND	110	
Butyl benzyl phthalate	ND	110	
3,3'-Dichlorobenzidine	ND	210	
Benzo(a)anthracene	ND	110	
Chrysene	ND	110	
bis(2-ethylhexyl)phthalate	17	110	
Di-n-octyl phthalate	ND	110	
Benzo(b)fluoranthene	ND	110	
Benzo(k)fluoranthene	ND	110	
Benzo(a)pyrene	ND	110	
Indeno(1,2,3-cd)pyrene	ND	110	
Dibenz(a,h)anthracene	ND	110	
Benzo(g,h,i)perylene	ND	110	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	58	35 - 114	23 - 120
2-Fluorobiphenyl	62	43 - 116	30 - 115
p-Terphenyl-d ₁₄	64	33 - 141	18 - 137
Phenol-d ₆	18	10 - 94	24 - 113
2-Fluorophenol	39	21 - 100	25 - 121
2,4,6-Tribromophenol	61	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 12 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-2

Client ID: CP-911-0493

TPH Per EPA Method 418.1
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	6.1	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	2.0	0.75	
TPH as	Diesel		

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	84
o-terphenyl	91

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 13 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-3

Client ID: CP-113-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-14-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1, J
Bromomethane	ND	10	
Vinyl Chloride	39	10	
Chloroethane	ND	10	
Methylene Chloride	1.3	5	
Acetone	ND	50	J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	35	5	
1,2-Dichloroethene (Total)	1.8	5	
Chloroform	0.78	5	J
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	16	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	49	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 14 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-3

Client ID: CP-113-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	98	88 - 110	81 - 117
Bromofluorobenzene	96	86 - 115	74 - 121
1,2-Dichloroethane-D4	106	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 15 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-3

Client ID: CP-113-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.8	
bis(2-Chloroethyl) ether	ND	9.8	
2-Chlorophenol	ND	9.8	
1,3-Dichlorobenzene	ND	9.8	
1,4-Dichlorobenzene	ND	9.8	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	9.8	
2-Methylphenol	ND	9.8	
bis(2-Chloroisopropyl) ether	ND	9.8	
4-Methylphenol	ND	9.8	
N-Nitroso-Di-N-propylamine	ND	9.8	
Hexachloroethane	ND	9.8	
Nitrobenzene	ND	9.8	
Isophorone	ND	9.8	
2-Nitrophenol	ND	9.8	
2,4-Dimethylphenol	ND	9.8	
Benzoic Acid	ND	49	
bis(2-Chloroethoxy) methane	ND	9.8	
2,4-Dichlorophenol	ND	9.8	
1,2,4-Trichlorobenzene	ND	9.8	
Naphthalene	ND	9.8	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	9.8	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 16 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-3

Client ID: CP-113-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.8	
Hexachlorocyclopentadiene	ND	9.8	
2,4,6-Trichlorophenol	ND	9.8	
2,4,5-Trichlorophenol	ND	9.8	
2-Chloronaphthalene	ND	9.8	
2-Nitroaniline	ND	49	
Dimethyl phthalate	ND	9.8	
Acenaphthylene	ND	9.8	
2,6-Dinitrotoluene	ND	9.8	
3-Nitroaniline	ND	49	
Acenaphthene	ND	9.8	
2,4-Dinitrophenol	ND	49	
4-Nitrophenol	ND	49	
Dibenzofuran	ND	9.8	
2,4-Dinitrotoluene	ND	9.8	
Diethylphthalate	ND	9.8	
4-Chlorophenyl phenyl ether	ND	9.8	
Fluorene	ND	9.8	
4-Nitroaniline	ND	49	
4,6-Dinitro-2-methylphenol	ND	49	
N-Nitrosodiphenylamine	ND	9.8	
4-Bromophenyl phenyl ether	ND	9.8	
Hexachlorobenzene	ND	9.8	
Pentachlorophenol	ND	49	
Phenanthrene	ND	9.8	
Anthracene	ND	9.8	
Di-n-butylphthalate	3.1	9.8	J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 17 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-3

Client ID: CP-113-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.8	J
Pyrene	ND	9.8	
Butyl benzyl phthalate	ND	9.8	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	9.8	
Chrysene	ND	9.8	
bis(2-ethylhexyl)phthalate	6.2	9.8	
Di-n-octyl phthalate	ND	9.8	
Benzo(b)fluoranthene	ND	9.8	
Benzo(k)fluoranthene	ND	9.8	
Benzo(a)pyrene	ND	9.8	
Indeno(1,2,3-cd)pyrene	ND	9.8	
Dibenz(a,h)anthracene	ND	9.8	
Benzo(g,h,i)perylene	ND	9.8	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	62	35 - 114	23 - 120
2-Fluorobiphenyl	59	43 - 116	30 - 115
p-Terphenyl-d ₁₄	59	33 - 141	18 - 137
Phenol-d ₆	19	10 - 94	24 - 113
2-Fluorophenol	37	21 - 100	25 - 121
2,4,6-Tribromophenol	77	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 18 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-3

Client ID: CP-113-0493

TPH Per EPA Method 418.1
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	2.1	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	92
o-terphenyl	103

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 19 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-4

Client ID: CP-114-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-14-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	ND	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 20 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-4

Client ID: CP-114-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	99	88 - 110	81 - 117
Bromofluorobenzene	97	86 - 115	74 - 121
1,2-Dichloroethane-D4	110	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 21 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-4

Client ID: CP-114-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl)ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 22 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-4

Client ID: CP-114-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	
2,6-Dinitrotoluene	ND	10	
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 23 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-4

Client ID: CP-114-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
Chrysene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	77	35 - 114	23 - 120
2-Fluorobiphenyl	58	43 - 116	30 - 115
p-Terphenyl-d ₁₄	57	33 - 141	18 - 137
Phenol-d ₆	24	10 - 94	24 - 113
2-Fluorophenol	48	21 - 100	25 - 121
2,4,6-Tribromophenol	79	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 24 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-4

Client ID: CP-114-0493

TPH Per EPA Method 418.1
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

SURROGATE RECOVERY, %
1-chlorooctane
o-terphenyl

83
96

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 25 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-5

Client ID: CP-112-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-14-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	3.2	10	J
Methylene Chloride	0.73	5	B1, J
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	1.7	5	J
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	1.1	5	J
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 26 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-5

Client ID: CP-112-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	1.8	5	J
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	100	88 - 110	81 - 117
Bromofluorobenzene	102	86 - 115	74 - 121
1,2-Dichloroethane-D4	114	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 27 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-5

Client ID: CP-112-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.9	
bis(2-Chloroethyl) ether	ND	9.9	
2-Chlorophenol	ND	9.9	
1,3-Dichlorobenzene	ND	9.9	
1,4-Dichlorobenzene	ND	9.9	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	9.9	
2-Methylphenol	ND	9.9	
bis(2-Chloroisopropyl) ether	ND	9.9	
4-Methylphenol	ND	9.9	
N-Nitroso-Di-N-propylamine	ND	9.9	
Hexachloroethane	ND	9.9	
Nitrobenzene	ND	9.9	
Isophorone	ND	9.9	
2-Nitrophenol	ND	9.9	
2,4-Dimethylphenol	ND	9.9	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy) methane	ND	9.9	
2,4-Dichlorophenol	ND	9.9	
1,2,4-Trichlorobenzene	ND	9.9	
Naphthalene	ND	9.9	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	9.9	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 28 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-5

Client ID: CP-112-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.9	
Hexachlorocyclopentadiene	ND	9.9	
2,4,6-Trichlorophenol	ND	9.9	
2,4,5-Trichlorophenol	ND	9.9	
2-Chloronaphthalene	ND	9.9	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	9.9	
Acenaphthylene	ND	9.9	
2,6-Dinitrotoluene	ND	9.9	
3-Nitroaniline	ND	50	
Acenaphthene	ND	9.9	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	9.9	
2,4-Dinitrotoluene	ND	9.9	
Diethylphthalate	ND	9.9	
4-Chlorophenyl phenyl ether	ND	9.9	
Fluorene	ND	9.9	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	9.9	
4-Bromophenyl phenyl ether	ND	9.9	
Hexachlorobenzene	ND	9.9	
Pentachlorophenol	ND	50	
Phenanthrene	ND	9.9	
Anthracene	ND	9.9	
Di-n-butylphthalate	3.0	9.9	J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 29 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-5

Client ID: CP-112-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.9	J
Pyrene	ND	9.9	
Butyl benzyl phthalate	ND	9.9	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	9.9	
Chrysene	ND	9.9	
bis(2-ethylhexyl)phthalate	2.2	9.9	
Di-n-octyl phthalate	ND	9.9	
Benzo(b)fluoranthene	ND	9.9	
Benzo(k)fluoranthene	ND	9.9	
Benzo(a)pyrene	ND	9.9	
Indeno(1,2,3-cd)pyrene	ND	9.9	
Dibenz(a,h)anthracene	ND	9.9	
Benzo(g,h,i)perylene	ND	9.9	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	64	35 - 114	23 - 120
2-Fluorobiphenyl	52	43 - 116	30 - 115
p-Terphenyl-d ₁₄	53	33 - 141	18 - 137
Phenol-d ₆	23	10 - 94	24 - 113
2-Fluorophenol	45	21 - 100	25 - 121
2,4,6-Tribromophenol	75	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 30 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-5

Client ID: CP-112-0493

TPH Per EPA Method 418.1
Date Extracted: 4-12-93
Date Analyzed: 4-13-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	2.8	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	92
o-terphenyl	106

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 31 of 32
Lab No. 31308
April 15, 1993

Lab Sample No. 31308-6

Client ID: Trip Blank #3

Volatile Organics by Method 8240
Date Analyzed: 4-14-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	7.1	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 32 of 32
 Lab No. 31308
 April 15, 1993

Lab Sample No. 31308-6

Client ID: Trip Blank #3

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	


ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	96	88 - 110	81 - 117
Bromofluorobenzene	88	86 - 115	74 - 121
1,2-Dichloroethane-D4	106	76 - 114	70 - 121

SOUND ANALYTICAL SERVICES


 DENNIS L. BEAN

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31308qc1
Matrix: Water
Units: mg/L
Date: April 15, 1993

DUPLICATE

Dup. No. 31340-1

Parameter	Sample (S)	Duplicate (D)	RPD	PQL	Flags
Total Petroleum Fuel Hydrocarbons	ND	ND	0.0	0.75	
<u>SURROGATE RECOVERY%</u>					
1-chlorooctane	87	83			
o-terphenyl	98	100			

RPD = relative percent difference
$$= [(S - D) / ((S + D) / 2)] \times 100$$

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MS/MSD No. 012R0101.D

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	RPD
Total Petroleum Fuel Hydrocarbons	ND	327	402	81	326	0.3

%R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

RPD = Relative Percent Difference

$$= [(MS - MSD) / ((MS + MSD) / 2)] \times 100$$

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31308qcl
Units: mg/L
Date: April 15, 1993

BLANK SPIKE RECOVERY

BS No. 032R0101.D

Parameter	Spike Added	Spike Recovered	%R
Total Petroleum Fuel Hydrocarbons	402	406	101

%R = Percent Recovery
= $[(BS - SR) / SA] \times 100$

METHOD BLANK

Blank No. 011R0101.D

Parameter	Result	PQL
Total Petroleum Fuel Hydrocarbons	ND	0.75
<u>SURROGATE RECOVERY%</u> 1-chlorooctane o-terphenyl	96 111	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 1 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31308qc2
Units: ug/L
Date: April 15, 1993
Blank No: SBLK88-S8408

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 2 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31308qc2
Units: ug/L
Date: April 15, 1993
Blank No: SBLK88-S8408

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	ND	10	
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Chrysene	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

PQL - Practical Quantitation Limit
ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 3 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31308qc2
Date: April 15, 1993
Blank No: SBLK88-S8408

SEMIVOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d5	71	35 - 114	23 - 120
2-Fluorobiphenyl	56	43 - 116	30 - 115
p-Terphenyl-d14	62	33 - 141	18 - 137
Phenol-d6	26	10 - 94	24 - 113
2-Fluorophenol	50	21 - 100	25 - 121
2,4,6-TBP	70	10 - 123	19 - 122

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Client Name: Burlington Environmental, Technical Services
Lab No: 31308qc3
Date: April 15, 1993

SEMI-VOLATILE ORGANICS

COMPOUND	SPIKE (ug/L)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD	FLAGS
Phenol	100	ND	23	23	25	25	5.9	
2-Chlorophenol	100	ND	56	56	56	56	0.54	
1,4-Dichlorobenzene	100	ND	39	39	42	42	6.7	
N-nitrosodi-n-Propylamine	100	ND	54	54	60	60	10	
1,2,4-Trichlorobenzene	100	ND	45	45	49	49	7.5	
4-Chloro-3-Methylphenol	100	ND	57	57	57	57	0.18	
Acenaphthene	100	ND	49	49	53	53	7.0	
4-Nitrophenol	100	ND	21	21	23	23	12	
2,4 Dinitrotoluene	100	ND	54	54	59	59	7.6	
Pentachlorophenol	100	ND	43	43	46	46	6.7	
Pyrene	100	ND	59	59	61	61	3.2	

RPD = Relative Percent Difference

% REC = Percent Recovery

ADVISORY LIMITS:

	RPD	% RECOVERY
Phenol	42	12 - 89
2-Chlorophenol	40	27 - 123
1,4-Dichlorobenzene	28	36 - 97
N-nitrosodi-n-Propylamine	38	41 - 116
1,2,4-Trichlorobenzene	28	39 - 98
4-Chloro-3-Methylphenol	42	23 - 97
Acenaphthene	31	46 - 118
4-Nitrophenol	50	10 - 80
2,4 Dinitrotoluene	38	24 - 96
Pentachlorophenol	50	9 - 103
Pyrene	31	26 - 127

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31308qc4
Units: ug/L
Date: April 15, 1993

BLANK SPIKE RECOVERY

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	51	50	102	53	50	106	3.8	
TCE	54	50	108	56	50	112	3.6	
Chloro-benzene	57	50	114	58	50	116	1.7	
Toluene	55	50	110	56	50	112	1.8	
Benzene	55	50	110	55	50	116	0.0	

%R = Percent Recovery

= $[(BS / SA) \times 100]$

RPD = Relative Percent Difference

= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

ND - Not Detected

ADVISORY LIMITS

RPD

% RECOVERY

1,1-Dichloroethene
Trichloroethene
Chlorobenzene
Toluene
Benzene

22
24
21
21
21

59 - 172
62 - 137
60 - 133
59 - 139
66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31308qc5
Units: ug/L
Date: April 15, 1993
Blank No: V9835

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	15	5	
Acetone	1.6	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31308qc5
Date: April 15, 1993
Blank No: V9835

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	101	86 - 115	81 - 117
Bromofluorobenzene	90	76 - 114	74 - 121
1,2-Dichloroethane d4	102	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

TPH by Method 418.1

Client: Burlington Environmental, Technical Services
Lab No: 31308qc6
Matrix: Water
Units: mg/L
Date: April 15, 1993

METHOD BLANK

Parameter	Result	PQL
Total Petroleum Hydrocarbons	ND	1.1

ND - Not Detected

PQL - Practical Quantitation Limit

BLANK SPIKE RECOVERY

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
Total Petroleum Hydrocarbons	70	100	70	84	100	84	18	

%R = Percent Recovery
= $(BS / SA) \times 100$

RPD = Relative Percent Difference
= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

BURLINGTON ENVIRONMENTAL

210 West Sand Bank Road
P.O. Box 330
Columbia, IL 62236-0330
618/281-7173
618/281-5120 FAX

CHAIN-OF-CUSTODY RECORD

C.O.C. SERIAL NO. 6327

PROJECT NAME <u>PIER 91</u>					NO. OF CONTAINERS	TYPE OF ANALYSIS					PRESER- VATIVES		REMARKS (CHEMICAL ANALYSIS REQUEST FORM NUMBER IF APPLICABLE)
PROJECT NUMBER <u>624878</u>		MAJOR TASK <u>7306</u>				VOC	SVOC	TPH	TPH 418.1	TPH 8015	ICED	CHEMICALS ADDED	
SAMPLERS <u>L. La ROSA, B WOOD</u>													
LAB DESTINATION <u>SCOTT ANALYTICAL SERVICE</u>													
SAMPLE NO.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION								
	4-7-93	1015	✓		CP-111-0493	5	2	1	1	1	✓	✓	
	4-7-93	1015	✓		CP-911-0493	5	2	1	1	1	✓	✓	
	4-7-93	1200	✓		CP-113-0493	5	2	1	1	1	✓	✓	
	4-7-93	1400	✓		CP-114-0493	5	2	1	1	1	✓	✓	
	4-7-93	1530	✓		CP-112-0493	5	2	1	1	1	✓	✓	
					trip blank #3	2							

REINQUISHED BY:

SIGNATURE

DATE

TIME

RECEIVED BY:

SIGNATURE

DATE

TIME

[Signature]
[Signature]

4-7-93 10:00
4-8-93 1:00

[Signature]
[Signature]

4-8-93 10:00
4-8-93 1:00

SHIPPING NOTES

LAB NOTES

SOUND ANALYTICAL SERVICES, INC. TACOMA, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: April 26, 1993

TO: Burlington Environmental, Technical Services

PROJECT NAME: Pier 91

PROJECT NUMBER: 624878-7603

LABORATORY NUMBER: 31234

Enclosed are one original and one copy of the Tier III data deliverables package for Laboratory Work Order Number 31234. Four samples and a trip blank were received for analysis at Sound Analytical Services, Inc., on 4/06/93.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,



ANDREW J. RIDDELL
Project Manager

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

April 26, 1993

TO: Burlington Environmental Engineering

PROJECT NUMBER: 624878-7603

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31234

The samples were taken on 4/05/93 and were received at Sound on 4/06/93. The samples were analyzed for Volatile Organics in accordance with EPA SW-846 Method 8240, Semivolatile Organics in accordance with EPA SW-846 Method 8270, Total Petroleum Hydrocarbons by EPA Method 418.1 modified for soil, and Total Petroleum Fuel Hydrocarbons by EPA Method 8015 modified.

VOLATILE ORGANICS

Samples 31234-1 through 31234-5 were analyzed on 4/10/93 and 4/12/93. Methylene chloride and acetone were detected in the method blanks at levels above the IDL. Results reported for these compounds in the associated samples were flagged B to indicate this. All QC parameters were within acceptance limits.

SEMIVOLATILE ORGANICS

Samples 31234-1 through 31234-4 were extracted on 4/07/93 and analyzed on 4/07/93 and 4/08/93. No compounds were detected in the method blank above the IDL. All QC parameters were within acceptance limits.

TOTAL PETROLEUM FUEL HYDROCARBONS

Samples 31234-1 through 31234-4 were extracted on 4/07/93 and analyzed on 4/11/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

TOTAL PETROLEUM HYDROCARBONS

Samples 31234-1 through 31234-4 were extracted on 4/07/93 and analyzed on 4/09/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Burlington Environmental, Date: April 14, 1993
Technical Services

Report On: Analysis of Water

Lab No.: 31234

Page 1 of 26

IDENTIFICATION:

Samples received on 04-06-93

Project: 624878-7306 Pier 91

ANALYSIS:

Lab Sample No. 31234-1

Client ID: CP105B-0493

Volatile Organics by Method 8240

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	ND	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	11	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, I

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 2 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-1

Client ID: CP105B-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	2.3	5	J
Chlorobenzene	ND	5	
Ethyl Benzene	2.7	5	J
Styrene	ND	5	
Total Xylenes	5.8	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	100	88 - 110	81 - 117
Bromofluorobenzene	96	86 - 115	74 - 121
1,2-Dichloroethane-D4	114	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, IN

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 3 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-1

Client ID: CP105B-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-7-93

Date Analyzed: 4-8-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	30	
bis(2-Chloroethyl) ether	ND	30	
2-Chlorophenol	ND	30	
1,3-Dichlorobenzene	ND	30	
1,4-Dichlorobenzene	ND	30	
Benzyl Alcohol	ND	60	
1,2-Dichlorobenzene	ND	30	
2-Methylphenol	ND	30	
bis(2-Chloroisopropyl) ether	ND	30	
4-Methylphenol	ND	30	
N-Nitroso-Di-N-propylamine	ND	30	
Hexachloroethane	ND	30	
Nitrobenzene	ND	30	
Isophorone	ND	30	
2-Nitrophenol	ND	30	
2,4-Dimethylphenol	ND	30	
Benzoic Acid	ND	150	
bis(2-Chloroethoxy) methane	ND	30	
2,4-Dichlorophenol	ND	30	
1,2,4-Trichlorobenzene	ND	30	
Naphthalene	ND	30	
4-Chloroaniline	ND	60	
Hexachlorobutadiene	ND	30	
4-Chloro-3-methylphenol	ND	60	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 4 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-1

Client ID: CP105B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	30	
Hexachlorocyclopentadiene	ND	30	
2,4,6-Trichlorophenol	ND	30	
2,4,5-Trichlorophenol	ND	30	
2-Chloronaphthalene	ND	30	
2-Nitroaniline	ND	150	
Dimethyl phthalate	ND	30	
Acenaphthylene	ND	30	
2,6-Dinitrotoluene	ND	30	
3-Nitroaniline	ND	150	
Acenaphthene	ND	30	
2,4-Dinitrophenol	ND	150	
4-Nitrophenol	ND	150	
Dibenzofuran	ND	30	
2,4-Dinitrotoluene	ND	30	
Diethylphthalate	ND	30	
4-Chlorophenyl phenyl ether	ND	30	
Fluorene	ND	30	
4-Nitroaniline	ND	150	
4,6-Dinitro-2-methylphenol	ND	150	
N-Nitrosodiphenylamine	ND	30	
4-Bromophenyl phenyl ether	ND	30	
Hexachlorobenzene	ND	30	
Pentachlorophenol	ND	150	
Phenanthrene	ND	30	
Anthracene	ND	30	
Di-n-butylphthalate	ND	30	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 5 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-1

Client ID: CP105B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	30	J
Pyrene	ND	30	
Butyl benzyl phthalate	ND	30	
3,3'-Dichlorobenzidine	ND	60	
Benzo(a)anthracene	ND	30	
Chrysene	ND	30	
bis(2-ethylhexyl)phthalate	26	30	
Di-n-octyl phthalate	ND	30	
Benzo(b)fluoranthene	ND	30	
Benzo(k)fluoranthene	ND	30	
Benzo(a)pyrene	ND	30	
Indeno(1,2,3-cd)pyrene	ND	30	
Dibenz(a,h)anthracene	ND	30	
Benzo(g,h,i)perylene	ND	30	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	70	35 - 114	23 - 120
2-Fluorobiphenyl	85	43 - 116	30 - 115
p-Terphenyl-d ₁₄	77	33 - 141	18 - 137
Phenol-d ₆	26	10 - 94	24 - 113
2-Fluorophenol	54	21 - 100	25 - 121
2,4,6-Tribromophenol	94	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
Project: 624878-7306 Pier 91
Page 6 of 26
Lab No. 31234
April 14, 1993

Lab Sample No. 31234-1

Client ID: CP105B-0493

TPH Per EPA Method 418.1
Date Extracted: 4-7-93
Date Analyzed: 4-9-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-7-93
Date Analyzed: 4-11-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	104
o-terphenyl	129

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 7 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-2

Client ID: CP105A-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	B1, J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	ND	5	
Acetone	1.3	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	J
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	1.8	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 8 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-2

Client ID: CP105A-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	100	88 - 110	81 - 117
Bromofluorobenzene	98	86 - 115	74 - 121
1,2-Dichloroethane-D4	110	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 9 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-2

Client ID: CP105A-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-7-93

Date Analyzed: 4-7-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.6	
bis(2-Chloroethyl) ether	ND	9.6	
2-Chlorophenol	ND	9.6	
1,3-Dichlorobenzene	ND	9.6	
1,4-Dichlorobenzene	ND	9.6	
Benzyl Alcohol	ND	19	
1,2-Dichlorobenzene	ND	9.6	
2-Methylphenol	ND	9.6	
bis(2-Chloroisopropyl)ether	ND	9.6	
4-Methylphenol	ND	9.6	
N-Nitroso-Di-N-propylamine	ND	9.6	
Hexachloroethane	ND	9.6	
Nitrobenzene	ND	9.6	
Isophorone	ND	9.6	
2-Nitrophenol	ND	9.6	
2,4-Dimethylphenol	ND	9.6	
Benzoic Acid	ND	48	
bis(2-Chloroethoxy)methane	ND	9.6	
2,4-Dichlorophenol	ND	9.6	
1,2,4-Trichlorobenzene	ND	9.6	
Naphthalene	ND	9.6	
4-Chloroaniline	ND	19	
Hexachlorobutadiene	ND	9.6	
4-Chloro-3-methylphenol	ND	19	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 10 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-2

Client ID: CP105A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.6	
Hexachlorocyclopentadiene	ND	9.6	
2,4,6-Trichlorophenol	ND	9.6	
2,4,5-Trichlorophenol	ND	9.6	
2-Chloronaphthalene	ND	9.6	
2-Nitroaniline	ND	48	
Dimethyl phthalate	ND	9.6	
Acenaphthylene	ND	9.6	
2,6-Dinitrotoluene	ND	9.6	
3-Nitroaniline	ND	48	
Acenaphthene	ND	9.6	
2,4-Dinitrophenol	ND	48	
4-Nitrophenol	ND	48	
Dibenzofuran	ND	9.6	
2,4-Dinitrotoluene	ND	9.6	
Diethylphthalate	ND	9.6	
4-Chlorophenyl phenyl ether	ND	9.6	
Fluorene	ND	9.6	
4-Nitroaniline	ND	48	
4,6-Dinitro-2-methylphenol	ND	48	
N-Nitrosodiphenylamine	ND	9.6	
4-Bromophenyl phenyl ether	ND	9.6	
Hexachlorobenzene	ND	9.6	
Pentachlorophenol	ND	48	
Phenanthrene	ND	9.6	
Anthracene	ND	9.6	
Di-n-butylphthalate	9.1	9.6	J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 11 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-2

Client ID: CP105A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.6	J
Pyrene	ND	9.6	
Butyl benzyl phthalate	ND	9.6	
3,3'-Dichlorobenzidine	ND	19	
Benzo(a)anthracene	ND	9.6	
Chrysene	ND	9.6	
bis(2-ethylhexyl)phthalate	2.8	9.6	
Di-n-octyl phthalate	ND	9.6	
Benzo(b)fluoranthene	ND	9.6	
Benzo(k)fluoranthene	ND	9.6	
Benzo(a)pyrene	ND	9.6	
Indeno(1,2,3-cd)pyrene	ND	9.6	
Dibenz(a,h)anthracene	ND	9.6	
Benzo(g,h,i)perylene	ND	9.6	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	73	35 - 114	23 - 120
2-Fluorobiphenyl	65	43 - 116	30 - 115
p-Terphenyl-d ₁₄	67	33 - 141	18 - 137
Phenol-d ₆	32	10 - 94	24 - 113
2-Fluorophenol	49	21 - 100	25 - 121
2,4,6-Tribromophenol	74	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, 2

Burlington Environmental, Technical
Project: 624878-7306 Pier 91
Page 12 of 26
Lab No. 31234
April 14, 1993

Lab Sample No. 31234-2

Client ID: CP105A-0493

TPH Per EPA Method 418.1
Date Extracted: 4-7-93
Date Analyzed: 4-9-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	1.3	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-7-93
Date Analyzed: 4-11-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	100
o-terphenyl	126

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 13 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-3

Client ID: CP104B-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	ND	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	1.9	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	12	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 14 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-3

Client ID: CP104B-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	2.3	5	J
Chlorobenzene	ND	5	
Ethyl Benzene	2.8	5	J
Styrene	ND	5	
Total Xylenes	4.9	5	J

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	104	88 - 110	81 - 117
Bromofluorobenzene	96	86 - 115	74 - 121
1,2-Dichloroethane-D4	110	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 15 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-3

Client ID: CP104B-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-7-93

Date Analyzed: 4-8-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	28	
bis(2-Chloroethyl) ether	ND	28	
2-Chlorophenol	ND	28	
1,3-Dichlorobenzene	ND	28	
1,4-Dichlorobenzene	ND	28	
Benzyl Alcohol	ND	57	
1,2-Dichlorobenzene	ND	28	
2-Methylphenol	ND	28	
bis(2-Chloroisopropyl)ether	ND	28	
4-Methylphenol	ND	28	
N-Nitroso-Di-N-propylamine	ND	28	
Hexachloroethane	ND	28	
Nitrobenzene	ND	28	
Isophorone	ND	28	
2-Nitrophenol	ND	28	
2,4-Dimethylphenol	ND	28	
Benzoic Acid	ND	140	
bis(2-Chloroethoxy)methane	ND	28	
2,4-Dichlorophenol	ND	28	
1,2,4-Trichlorobenzene	ND	28	
Naphthalene	ND	28	
4-Chloroaniline	ND	57	
Hexachlorobutadiene	ND	28	
4-Chloro-3-methylphenol	ND	57	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 16 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-3

Client ID: CP104B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	28	
Hexachlorocyclopentadiene	ND	28	
2,4,6-Trichlorophenol	ND	28	
2,4,5-Trichlorophenol	ND	28	
2-Chloronaphthalene	ND	28	
2-Nitroaniline	ND	140	
Dimethyl phthalate	ND	28	
Acenaphthylene	ND	28	
2,6-Dinitrotoluene	ND	28	
3-Nitroaniline	ND	140	
Acenaphthene	ND	28	
2,4-Dinitrophenol	ND	140	
4-Nitrophenol	ND	140	
Dibenzofuran	ND	28	
2,4-Dinitrotoluene	ND	28	
Diethylphthalate	ND	28	
4-Chlorophenyl phenyl ether	ND	28	
Fluorene	ND	28	
4-Nitroaniline	ND	140	
4,6-Dinitro-2-methylphenol	ND	140	
N-Nitrosodiphenylamine	ND	28	
4-Bromophenyl phenyl ether	ND	28	
Hexachlorobenzene	ND	28	
Pentachlorophenol	ND	140	
Phenanthrene	ND	28	
Anthracene	ND	28	
Di-n-butylphthalate	ND	28	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 17 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-3

Client ID: CP104B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	28	J
Pyrene	ND	28	
Butyl benzyl phthalate	ND	28	
3,3'-Dichlorobenzidine	ND	57	
Benzo(a)anthracene	ND	28	
Chrysene	ND	28	
bis(2-ethylhexyl)phthalate	46	28	
Di-n-octyl phthalate	4.3	28	
Benzo(b)fluoranthene	ND	28	
Benzo(k)fluoranthene	ND	28	
Benzo(a)pyrene	ND	28	
Indeno(1,2,3-cd)pyrene	ND	28	
Dibenz(a,h)anthracene	ND	28	
Benzo(g,h,i)perylene	ND	28	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	80	35 - 114	23 - 120
2-Fluorobiphenyl	93	43 - 116	30 - 115
p-Terphenyl-d ₁₄	85	33 - 141	18 - 137
Phenol-d ₆	27	10 - 94	24 - 113
2-Fluorophenol	49	21 - 100	25 - 121
2,4,6-Tribromophenol	100	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, I

Burlington Environmental, Technical
Project: 624878-7306 Pier 91
Page 18 of 26
Lab No. 31234
April 14, 1993

Lab Sample No. 31234-3

Client ID: CP104B-0493

TPH Per EPA Method 418.1
Date Extracted: 4-7-93
Date Analyzed: 4-9-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-7-93
Date Analyzed: 4-11-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	81
o-terphenyl	128

Continued

SOUND ANALYTICAL SERVICES, INC. ST. LOUIS, MO

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 19 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-4

Client ID: CP104A-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	3.8	10	J
Chloroethane	4.1	10	J
Methylene Chloride	ND	5	
Acetone	1.4	50	B1, J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	15	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	2.5	5	J
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 20 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-4

Client ID: CP104A-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	1.1	5	J
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	10	5	
Chlorobenzene	ND	5	
Ethyl Benzene	4.2	5	J
Styrene	ND	5	
Total Xylenes	20	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	95	88 - 110	81 - 117
Bromofluorobenzene	99	86 - 115	74 - 121
1,2-Dichloroethane-D4	109	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 21 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-4

Client ID: CP104A-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-7-93
 Date Analyzed: 4-8-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.8	
bis(2-Chloroethyl) ether	ND	9.8	
2-Chlorophenol	ND	9.8	
1,3-Dichlorobenzene	ND	9.8	
1,4-Dichlorobenzene	ND	9.8	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	9.8	
2-Methylphenol	ND	9.8	
bis(2-Chloroisopropyl)ether	ND	9.8	
4-Methylphenol	ND	9.8	
N-Nitroso-Di-N-propylamine	ND	9.8	
Hexachloroethane	ND	9.8	
Nitrobenzene	ND	9.8	
Isophorone	ND	9.8	
2-Nitrophenol	ND	9.8	
2,4-Dimethylphenol	ND	9.8	
Benzoic Acid	ND	49	
bis(2-Chloroethoxy)methane	ND	9.8	
2,4-Dichlorophenol	ND	9.8	
1,2,4-Trichlorobenzene	ND	9.8	
Naphthalene	5.5	9.8	J
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	9.8	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, IN

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 22 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-4

Client ID: CP104A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	3.9	9.8	J
Hexachlorocyclopentadiene	ND	9.8	
2,4,6-Trichlorophenol	ND	9.8	
2,4,5-Trichlorophenol	ND	9.8	
2-Chloronaphthalene	ND	9.8	
2-Nitroaniline	ND	49	
Dimethyl phthalate	ND	9.8	
Acenaphthylene	ND	9.8	
2,6-Dinitrotoluene	ND	9.8	
3-Nitroaniline	ND	49	
Acenaphthene	42	9.8	
2,4-Dinitrophenol	ND	49	
4-Nitrophenol	ND	49	
Dibenzofuran	4.8	9.8	J
2,4-Dinitrotoluene	ND	9.8	
Diethylphthalate	ND	9.8	
4-Chlorophenyl phenyl ether	ND	9.8	
Fluorene	27	9.8	
4-Nitroaniline	ND	49	
4,6-Dinitro-2-methylphenol	ND	49	
N-Nitrosodiphenylamine	ND	9.8	
4-Bromophenyl phenyl ether	ND	9.8	
Hexachlorobenzene	ND	9.8	
Pentachlorophenol	ND	49	
Phenanthrene	4.0	9.8	J
Anthracene	2.4	9.8	J
Di-n-butylphthalate	7.7	9.8	J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 23 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-4

Client ID: CP104A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	5.7	9.8	J
Pyrene	2.7	9.8	J
Butyl benzyl phthalate	ND	9.8	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	9.8	
Chrysene	ND	9.8	
bis(2-ethylhexyl)phthalate	3.5	9.8	J
Di-n-octyl phthalate	ND	9.8	
Benzo(b)fluoranthene	ND	9.8	
Benzo(k)fluoranthene	ND	9.8	
Benzo(a)pyrene	ND	9.8	
Indeno(1,2,3-cd)pyrene	ND	9.8	
Dibenz(a,h)anthracene	ND	9.8	
Benzo(g,h,i)perylene	ND	9.8	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	74	35 - 114	23 - 120
2-Fluorobiphenyl	67	43 - 116	30 - 115
p-Terphenyl-d ₁₄	69	33 - 141	18 - 137
Phenol-d ₆	32	10 - 94	24 - 113
2-Fluorophenol	50	21 - 100	25 - 121
2,4,6-Tribromophenol	29	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
Project: 624878-7306 Pier 91
Page 24 of 26
Lab No. 31234
April 14, 1993

Lab Sample No. 31234-4

Client ID: CP104A-0493

TPH Per EPA Method 418.1
Date Extracted: 4-7-93
Date Analyzed: 4-9-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	15	1.0	

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-7-93
Date Analyzed: 4-11-93

<u>Parameters</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	110
o-terphenyl	136

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 25 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-5

Client ID: TRIP BLANK

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	4.8	5	B
Acetone	0.96	50	B
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical
 Project: 624878-7306 Pier 91
 Page 26 of 26
 Lab No. 31234
 April 14, 1993

Lab Sample No. 31234-5

Client ID: TRIP BLANK

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	98	88 - 110	81 - 117
Bromofluorobenzene	97	86 - 115	74 - 121
1,2-Dichloroethane-D4	108	76 - 114	70 - 121

SOUND ANALYTICAL SERVICES


 DENNIS L. BEAN

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
 Lab No: 31234qc5
 Units: ug/L
 Date: April 14, 1993
 Blank No: V9714
 Date Analyzed: 4-10-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	3.8	5	J
Acetone	2.3	50	J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31234qc5
Date: April 14, 1993
Blank No: V9714
Date Analyzed: 4-10-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	99	86 - 115	81 - 117
Bromofluorobenzene	99	76 - 114	74 - 121
1,2-Dichloroethane d4	103	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31234qcl
Units: ug/L
Date: April 14, 1993
Blank No: V9759
Date Analyzed: 4-12-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	2.9	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31234qc1
Date: April 14, 1993
Blank No: V9759
Date Analyzed: 4-12-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	101	86 - 115	81 - 117
Bromofluorobenzene	90	76 - 114	74 - 121
1,2-Dichloroethane d4	113	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31234qc2
Units: ug/L
Date: April 14, 1993

BLANK SPIKE RECOVERY

Date Analyzed: 4-10-93

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	42	50	84	42	50	84	0.0	
TCE	51	50	102	51	50	104	0.0	
Chloro- benzene	50	50	100	49	50	98	2.0	
Toluene	51	50	102	50	50	100	2.0	
Benzene	49	50	98	48	50	96	2.1	

%R = Percent Recovery
= $[(BS / SA) \times 100]$
RPD = Relative Percent Difference
= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

ND - Not Detected

ADVISORY LIMITS

RPD

% RECOVERY

1,1-Dichloroethene	22	59 - 172
Trichloroethene	24	62 - 137
Chlorobenzene	21	60 - 133
Toluene	21	59 - 139
Benzene	21	66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31234qc3
Units: ug/L
Date: April 14, 1993

BLANK SPIKE RECOVERY

Date Analyzed: 4-12-93

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	43	50	86	43	50	86	0.0	
TCE	53	50	106	51	50	102	3.8	
Chloro- benzene	53	50	106	51	50	102	3.8	
Toluene	54	50	108	52	50	104	3.8	
Benzene	52	50	104	52	50	104	0.0	

%R = Percent Recovery
= $[(BS / SA) \times 100]$
RPD = Relative Percent Difference
= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

ND - Not Detected

ADVISORY LIMITS

RPD

% RECOVERY

1,1-Dichloroethene	22	59 - 172
Trichloroethene	24	62 - 137
Chlorobenzene	21	60 - 133
Toluene	21	59 - 139
Benzene	21	66 - 142

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

TPH by Method 418.1

Client: Burlington Environmental, Technical Services
Lab No: 31234qc4
Matrix: Water
Units: mg/L
Date: April 14, 1993

METHOD BLANK

Parameter	Result	PQL
Total Petroleum Hydrocarbons	ND	1.0

ND - Not Detected

PQL - Practical Quantitation Limit

BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY

Parameter	Sample Result (SR)	Spiked Sample Result (BS)	Spike Added (SA)	BS %R	Spike Dup Result (BSD)	BSD %R	RPD	Flag
TPH	ND	91	100	91	87	87	4.5	

%R = Percent Recovery
= $[(BS - SR) / SA] \times 100$

RPD = Relative Percent Difference
= $[(BS - BSD) / ((BS + BSD) / 2)] \times 100$

SOUND ANALYTICAL SERVICES, INC. SERVICE, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31234qc6
Matrix: Water
Units: mg/L
Date: April 14, 1993

DUPLICATE

Dup. No. 31234-1

Parameter	Sample (S)	Duplicate (D)	RPD	PQL	Flags
Total Petroleum Fuel Hydrocarbons	ND	ND	0.0	0.75	
<u>SURROGATE RECOVERY%</u>					
1-chlorooctane	104	87			
o-terphenyl	129	118			

RPD = relative percent difference
$$= [(S - D) / ((S + D) / 2)] \times 100$$

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MS/MSD No. 005R0201.D

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	RPD
Total Petroleum Fuel Hydrocarbons	ND	379	402	94	394	3.9

%R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

RPD = Relative Percent Difference

$$= [(MS - MSD) / ((MS + MSD) / 2)] \times 100$$

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31234qc6
Units: mg/L
Date: April 14, 1993

BLANK SPIKE RECOVERY

BS No. 004R0201.d

Parameter	Spike Added	Spike Recovered	%R
Total Petroleum Fuel Hydrocarbons	402	281	70

%R = Percent Recovery
= $[(BS - SR) / SA] \times 100$

METHOD BLANK

Blank No. 003R0201.D

Parameter	Result	PQL
Total Petroleum Fuel Hydrocarbons	ND	0.75
<u>SURROGATE RECOVERY%</u> 1-chlorooctane o-terphenyl	72 136	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Client Name: Burlington Environmental, Technical Services
Lab No: 31234qc7
Date: April 14, 1993

SEMI-VOLATILE ORGANICS

COMPOUND	SPIKE (ug/L)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD	FLAGS
Phenol	100	ND	34	34	39	39	14	
2-Chlorophenol	100	ND	67	67	58	58	14	
1,4-Dichlorobenzene	100	ND	53	53	49	49	7.8	
N-nitrosodi-n-Propylamine	100	ND	76	76	66	66	14	
1,2,4-Trichlorobenzene	100	ND	57	57	54	54	5.4	
4-Chloro-3-Methylphenol	100	ND	77	77	68	68	12	
Acenaphthene	100	ND	58	58	54	54	8.1	
4-Nitrophenol	100	ND	20	20	16	16	22	
2,4 Dinitrotoluene	100	ND	68	68	60	60	13	
Pentachlorophenol	100	ND	55	55	47	47	16	
Pyrene	100	ND	84	84	74	74	13	

RPD = Relative Percent Difference

% REC = Percent Recovery

ADVISORY LIMITS:

	RPD	% RECOVERY
Phenol	42	12 - 89
2-Chlorophenol	40	27 - 123
1,4-Dichlorobenzene	28	36 - 97
N-nitrosodi-n-Propylamine	38	41 - 116
1,2,4-Trichlorobenzene	28	39 - 98
4-Chloro-3-Methylphenol	42	23 - 97
Acenaphthene	31	46 - 118
4-Nitrophenol	50	10 - 80
2,4 Dinitrotoluene	38	24 - 96
Pentachlorophenol	50	9 - 103
Pyrene	31	26 - 127

SOUND ANALYTICAL SERVICES, INC. SERVICES

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 1 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31234qc8
Units: ug/L
Date: April 14, 1993
Blank No: SBLK84-S8379

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC.

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 2 of 3

Client: Burlington Environmental, Technical Services
 Lab No: 31234qc8
 Units: ug/L
 Date: April 14, 1993
 Blank No: SBLK84-S8379

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	ND	10	
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Chrysene	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

PQL - Practical Quantitation Limit
 ND - Not Detected

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 3 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31234qc8
Date: April 14, 1993
Blank No: SBLK84-S8379

SEMIVOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d5	80	35 - 114	23 - 120
2-Fluorobiphenyl	61	43 - 116	30 - 115
p-Terphenyl-d14	73	33 - 141	18 - 137
Phenol-d6	35	10 - 94	24 - 113
2-Fluorophenol	53	21 - 100	25 - 121
2,4,6-TBP	71	10 - 123	19 - 122

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

CHAIN OF CUSTODY



210 West Sand Bank Road
P.O. Box 330
Columbia, IL 62238-0330
618/281-7173
618/281-5120 FAX

CHAIN-OF-CUSTODY RECORD

C.O.C. SERIAL NO. 6319

PROJECT NAME		PROJECT NUMBER		MAJOR TASK		SAMPLERS		LAB DESTINATION		NO. OF CONTAINERS	TYPE OF ANALYSIS	PRESERVATIVES		REMARKS (CHEMICAL ANALYSIS REQUEST FORM NUMBER IF APPLICABLE)
SAMPLE NO.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION	ICED	CHEMICALS ADDED							
	4-5-93	1115		✓	CP105B-0493	5	2	1	1	1	✓	✓		
	4-5-93	1305		✓	CP105A-0493	5	2	1	1	1	✓	✓		
	4-5-93	1500		✓	CP104B-0493	5	2	1	1	1	✓	✓		
	4-5-93	1557		✓	CP104A-0493	5	2	1	1	1	✓	✓		
	4-5-93				Trip blank (BIB)	2	2							

RELINQUISHED BY

RECEIVED BY

SIGNATURE		DATE	TIME	SIGNATURE		DATE	TIME
<i>[Signature]</i>		4-5-93	1700	<i>J. E. Palm</i>		4-6-93	9:10A
<i>J. E. Palm</i>		4-6-93	11:10A	<i>D. Nguyen</i>		4/6/93	11:10
SHIPPING NOTES				LAB NOTES			

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

TRANSMITTAL MEMORANDUM

DATE: May 6, 1993

TO: Burlington Environmental Engineering

PROJECT NAME: Pier 91

PROJECT NUMBER: 624878-7306

LABORATORY NUMBER: 31280

Enclosed are one original and one copy of the Tier III data deliverables package for Laboratory Work Order Number 31280. The samples were received for analysis at Sound Analytical Services, Inc., on April 7, 1993.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,



Andrew J. Riddell
Project Manager

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

April 30, 1993

TO: Burlington Environmental Engineering

PROJECT NUMBER: 624878-7306

PROJECT NAME: Pier 91

LABORATORY WORK ORDER NUMBER: 31280

The samples were taken on 4/06/93 and were received at Sound on 4/07/93. The samples were analyzed for Volatile Organics in accordance with EPA SW-846 Method 8240, Semivolatile Organics in accordance with EPA SW-846 Method 8270, Total Petroleum Hydrocarbons by EPA Method 418.1 modified for soil, and Total Petroleum Fuel Hydrocarbons by EPA Method 8015 modified.

VOLATILE ORGANICS

Samples 31280-1 through 31280-5 were analyzed on 4/12/93. Methylene chloride and acetone were detected in the method blanks at levels above the IDL. Results reported for these compounds in the associated samples were flagged B to indicate this. All QC parameters were within acceptance limits.

SEMIVOLATILE ORGANICS

Samples 31280-1 through 31280-4 were extracted on 4/07/93 and analyzed on 4/07/93 and 4/08/93. No compounds were detected in the method blank above the IDL. All QC parameters were within acceptance limits.

TOTAL PETROLEUM FUEL HYDROCARBONS

Samples 31280-1 through 31280-4 were extracted on 4/12/93 and analyzed on 4/14/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

TOTAL PETROLEUM HYDROCARBONS

Samples 31280-1 through 31280-4 were extracted and analyzed on 4/09/93. No contamination above the PQL was present in the method blank. All QC parameters were within acceptance limits.

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Burlington Environmental, Date: April 15, 1993
Technical Services

Report On: Analysis of Water

Lab No.: 31280

Page 1 of 26

IDENTIFICATION:

Samples received on 04-07-93

Project: 624878-7306 Pier 91

ANALYSIS:

Lab Sample No. 31280-1

Client ID: CP108B-0493

Volatile Organics by Method 8240

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	ND	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	9.1	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 2 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-1

Client ID: CP108B-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	2.3	5	J
Chlorobenzene	ND	5	
Ethyl Benzene	2.3	5	J
Styrene	ND	5	
Total Xylenes	5.2	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	100	88 - 110	81 - 117
Bromofluorobenzene	97	86 - 115	74 - 121
1,2-Dichloroethane-D4	113	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 3 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-1

Client ID: CP108B-0493

Semivolatile Organics Per EPA SW-846 Method 8270
 Date Extracted: 4-9-93
 Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl)ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	51	
bis(2-Chloroethoxy)methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 4 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-1

Client ID: CP108B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	51	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	
2,6-Dinitrotoluene	ND	10	
3-Nitroaniline	ND	51	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	51	
4-Nitrophenol	ND	51	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	51	
4,6-Dinitro-2-methylphenol	ND	51	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	51	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 5 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-1

Client ID: CP108B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
Chrysene	ND	10	
bis(2-ethylhexyl)phthalate	23	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	66	35 - 114	23 - 120
2-Fluorobiphenyl	58	43 - 116	30 - 115
p-Terphenyl-d ₁₄	54	33 - 141	18 - 137
Phenol-d ₆	11	10 - 94	24 - 113
2-Fluorophenol	44	21 - 100	25 - 121
2,4,6-Tribromophenol	82	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 6 of 26
Lab No. 31280
April 15, 1993

Lab Sample No. 31280-1

Client ID: CP108B-0493

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	80
o-terphenyl	102

TPH Per EPA Method 418.1
Date Extracted: 4-9-93
Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 7 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-2

Client ID: CP108A-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	1.9	5	B1, J
Acetone	1.1	50	B1, J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	2.1	5	J
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 8 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-2

Client ID: CP108A-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	0.83	5	J
Chlorobenzene	ND	5	
Ethyl Benzene	1.2	5	J
Styrene	ND	5	
Total Xylenes	2.2	5	J

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	98	88 - 110	81 - 117
Bromofluorobenzene	99	86 - 115	74 - 121
1,2-Dichloroethane-D4	109	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES,

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 9 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-2

Client ID: CP108A-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.9	
bis(2-Chloroethyl) ether	ND	9.9	
2-Chlorophenol	ND	9.9	
1,3-Dichlorobenzene	ND	9.9	
1,4-Dichlorobenzene	ND	9.9	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	9.9	
2-Methylphenol	ND	9.9	
bis(2-Chloroisopropyl) ether	ND	9.9	
4-Methylphenol	ND	9.9	
N-Nitroso-Di-N-propylamine	ND	9.9	
Hexachloroethane	ND	9.9	
Nitrobenzene	ND	9.9	
Isophorone	ND	9.9	
2-Nitrophenol	ND	9.9	
2,4-Dimethylphenol	ND	9.9	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy) methane	ND	9.9	
2,4-Dichlorophenol	ND	9.9	
1,2,4-Trichlorobenzene	ND	9.9	
Naphthalene	ND	9.9	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	9.9	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 10 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-2

Client ID: CP108A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.9	
Hexachlorocyclopentadiene	ND	9.9	
2,4,6-Trichlorophenol	ND	9.9	
2,4,5-Trichlorophenol	ND	9.9	
2-Chloronaphthalene	ND	9.9	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	9.9	
Acenaphthylene	ND	9.9	
2,6-Dinitrotoluene	ND	9.9	
3-Nitroaniline	ND	50	
Acenaphthene	ND	9.9	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	9.9	
2,4-Dinitrotoluene	ND	9.9	
Diethylphthalate	ND	9.9	
4-Chlorophenyl phenyl ether	ND	9.9	
Fluorene	ND	9.9	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	9.9	
4-Bromophenyl phenyl ether	ND	9.9	
Hexachlorobenzene	ND	9.9	
Pentachlorophenol	ND	50	
Phenanthrene	ND	9.9	
Anthracene	ND	9.9	
Di-n-butylphthalate	5.8	9.9	J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 11 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-2

Client ID: CP108A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.9	J
Pyrene	ND	9.9	
Butyl benzyl phthalate	ND	9.9	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	9.9	
Chrysene	ND	9.9	
bis(2-ethylhexyl)phthalate	1.6	9.9	
Di-n-octyl phthalate	ND	9.9	
Benzo(b)fluoranthene	ND	9.9	
Benzo(k)fluoranthene	ND	9.9	
Benzo(a)pyrene	ND	9.9	
Indeno(1,2,3-cd)pyrene	ND	9.9	
Dibenz(a,h)anthracene	ND	9.9	
Benzo(g,h,i)perylene	ND	9.9	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	62	35 - 114	23 - 120
2-Fluorobiphenyl	55	43 - 116	30 - 115
p-Terphenyl-d ₁₄	60	33 - 141	18 - 137
Phenol-d ₆	24	10 - 94	24 - 113
2-Fluorophenol	44	21 - 100	25 - 121
2,4,6-Tribromophenol	79	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 12 of 26
Lab No. 31280
April 15, 1993

Lab Sample No. 31280-2

Client ID: CP108A-0493

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	105
o-terphenyl	112

TPH Per EPA Method 418.1
Date Extracted: 4-9-93
Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 13 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-3

Client ID: CP103B-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	1.2	5	B1, J
Acetone	0.90	50	B1, J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	6.8	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services

Project: 624878-7306 Pier 91

Page 14 of 26

Lab No. 31280

April 15, 1993

Lab Sample No. 31280-3

Client ID: CP103B-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	99	88 - 110	81 - 117
Bromofluorobenzene	97	86 - 115	74 - 121
1,2-Dichloroethane-D4	108	76 - 114	70 - 121

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 15 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-3

Client ID: CP103B-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	11	
bis(2-Chloroethyl) ether	ND	11	
2-Chlorophenol	ND	11	
1,3-Dichlorobenzene	ND	11	
1,4-Dichlorobenzene	ND	11	
Benzyl Alcohol	ND	21	
1,2-Dichlorobenzene	ND	11	
2-Methylphenol	ND	11	
bis(2-Chloroisopropyl) ether	ND	11	
4-Methylphenol	ND	11	
N-Nitroso-Di-N-propylamine	ND	11	
Hexachloroethane	ND	11	
Nitrobenzene	ND	11	
Isophorone	ND	11	
2-Nitrophenol	ND	11	
2,4-Dimethylphenol	ND	11	
Benzoic Acid	ND	53	
bis(2-Chloroethoxy) methane	ND	11	
2,4-Dichlorophenol	ND	11	
1,2,4-Trichlorobenzene	ND	11	
Naphthalene	ND	11	
4-Chloroaniline	ND	21	
Hexachlorobutadiene	ND	11	
4-Chloro-3-methylphenol	ND	21	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 16 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-3

Client ID: CP103B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	11	
Hexachlorocyclopentadiene	ND	11	
2,4,6-Trichlorophenol	ND	11	
2,4,5-Trichlorophenol	ND	11	
2-Chloronaphthalene	ND	11	
2-Nitroaniline	ND	53	
Dimethyl phthalate	ND	11	
Acenaphthylene	ND	11	
2,6-Dinitrotoluene	ND	11	
3-Nitroaniline	ND	53	
Acenaphthene	ND	11	
2,4-Dinitrophenol	ND	53	
4-Nitrophenol	ND	53	
Dibenzofuran	ND	11	
2,4-Dinitrotoluene	ND	11	
Diethylphthalate	ND	11	
4-Chlorophenyl phenyl ether	ND	11	
Fluorene	ND	11	
4-Nitroaniline	ND	53	
4,6-Dinitro-2-methylphenol	ND	53	
N-Nitrosodiphenylamine	ND	11	
4-Bromophenyl phenyl ether	ND	11	
Hexachlorobenzene	ND	11	
Pentachlorophenol	ND	53	
Phenanthrene	ND	11	
Anthracene	ND	11	
Di-n-butylphthalate	4.4	11	J

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 17 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-3

Client ID: CP103B-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	11	
Pyrene	ND	11	
Butyl benzyl phthalate	ND	11	
3,3'-Dichlorobenzidine	ND	21	
Benzo(a)anthracene	ND	11	
Chrysene	ND	11	
bis(2-ethylhexyl)phthalate	11	11	
Di-n-octyl phthalate	ND	11	
Benzo(b)fluoranthene	ND	11	
Benzo(k)fluoranthene	ND	11	
Benzo(a)pyrene	ND	11	
Indeno(1,2,3-cd)pyrene	ND	11	
Dibenz(a,h)anthracene	ND	11	
Benzo(g,h,i)perylene	ND	11	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	67	35 - 114	23 - 120
2-Fluorobiphenyl	56	43 - 116	30 - 115
p-Terphenyl-d ₁₄	58	33 - 141	18 - 137
Phenol-d ₆	23	10 - 94	24 - 113
2-Fluorophenol	47	21 - 100	25 - 121
2,4,6-Tribromophenol	77	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 18 of 26
Lab No. 31280
April 15, 1993

Lab Sample No. 31280-3

Client ID: CP103B-0493

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	95
o-terphenyl	103

TPH Per EPA Method 418.1
Date Extracted: 4-9-93
Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 19 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-4

Client ID: CP103A-0493

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	20	
Bromomethane	ND	20	
Vinyl Chloride	ND	20	
Chloroethane	10	20	J
Methylene Chloride	21	10	B1
Acetone	2.1	100	B1, J
Carbon Disulfide	ND	10	
1,1-Dichloroethene	ND	10	
1,1-Dichloroethane	ND	10	
1,2-Dichloroethene (Total)	ND	10	
Chloroform	ND	10	
1,2-Dichloroethane	ND	10	
2-Butanone	ND	50	
1,1,1-Trichloroethane	ND	10	
Carbon Tetrachloride	ND	10	
Vinyl Acetate	ND	50	
Bromodichloromethane	ND	10	
1,2-Dichloropropane	ND	10	
Cis-1,3-Dichloropropene	ND	10	
Trichloroethene	ND	10	
Dibromochloromethane	ND	10	
1,1,2-Trichloroethane	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 20 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-4

Client ID: CP103A-0493

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	2.2	10	J
Trans-1,3-Dichloropropene	ND	10	
Bromoform	ND	10	
4-Methyl-2-Pentanone	ND	50	
2-Hexanone	ND	10	J
Tetrachloroethene	ND	10	
1,1,2,2-Tetrachloroethane	ND	10	
Toluene	4.3	10	
Chlorobenzene	ND	10	
Ethyl Benzene	ND	10	
Styrene	ND	10	
Total Xylenes	ND	10	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	96	88 - 110	81 - 117
Bromofluorobenzene	99	86 - 115	74 - 121
1,2-Dichloroethane-D4	109	76 - 114	70 - 121

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, I

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 21 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-4

Client ID: CP103A-0493

Semivolatile Organics Per EPA SW-846 Method 8270

Date Extracted: 4-9-93

Date Analyzed: 4-12-93

Compound	Concentration ug/L	PQL	Flag
Phenol	ND	9.9	J
bis(2-Chloroethyl) ether	ND	9.9	
2-Chlorophenol	ND	9.9	
1,3-Dichlorobenzene	ND	9.9	
1,4-Dichlorobenzene	ND	9.9	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	9.9	
2-Methylphenol	ND	9.9	
bis(2-Chloroisopropyl)ether	ND	9.9	
4-Methylphenol	5.3	9.9	
N-Nitroso-Di-N-propylamine	ND	9.9	
Hexachloroethane	ND	9.9	
Nitrobenzene	ND	9.9	
Isophorone	ND	9.9	
2-Nitrophenol	ND	9.9	
2,4-Dimethylphenol	ND	9.9	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy)methane	ND	9.9	
2,4-Dichlorophenol	ND	9.9	
1,2,4-Trichlorobenzene	ND	9.9	
Naphthalene	ND	9.9	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	9.9	
4-Chloro-3-methylphenol	ND	20	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 22 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-4

Client ID: CP103A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
2-Methylnaphthalene	ND	9.9	
Hexachlorocyclopentadiene	ND	9.9	
2,4,6-Trichlorophenol	ND	9.9	
2,4,5-Trichlorophenol	ND	9.9	
2-Chloronaphthalene	ND	9.9	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	9.9	
Acenaphthylene	ND	9.9	
2,6-Dinitrotoluene	ND	9.9	
3-Nitroaniline	ND	50	
Acenaphthene	ND	9.9	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	9.9	
2,4-Dinitrotoluene	ND	9.9	
Diethylphthalate	ND	9.9	
4-Chlorophenyl phenyl ether	ND	9.9	
Fluorene	ND	9.9	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	9.9	
4-Bromophenyl phenyl ether	ND	9.9	
Hexachlorobenzene	ND	9.9	
Pentachlorophenol	ND	50	
Phenanthrene	ND	9.9	
Anthracene	ND	9.9	
Di-n-butylphthalate	4.7	9.9	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 23 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-4

Client ID: CP103A-0493

EPA Method 8270 Continued

Compound	Concentration ug/L	PQL	Flag
Fluoranthene	ND	9.9	J
Pyrene	ND	9.9	
Butyl benzyl phthalate	ND	9.9	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	9.9	
Chrysene	ND	9.9	
bis(2-ethylhexyl)phthalate	1.8	9.9	
Di-n-octyl phthalate	ND	9.9	
Benzo(b)fluoranthene	ND	9.9	
Benzo(k)fluoranthene	ND	9.9	
Benzo(a)pyrene	ND	9.9	
Indeno(1,2,3-cd)pyrene	ND	9.9	
Dibenz(a,h)anthracene	ND	9.9	
Benzo(g,h,i)perylene	ND	9.9	

ND - Not Detected

PQL - Practical Quantitation Limit

Semi-Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d ₅	49	35 - 114	23 - 120
2-Fluorobiphenyl	53	43 - 116	30 - 115
p-Terphenyl-d ₁₄	56	33 - 141	18 - 137
Phenol-d ₆	22	10 - 94	24 - 113
2-Fluorophenol	38	21 - 100	25 - 121
2,4,6-Tribromophenol	67	10 - 123	19 - 122

Continued

SOUND ANALYTICAL SERVICES, INC.

Burlington Environmental, Technical Services
Project: 624878-7306 Pier 91
Page 24 of 26
Lab No. 31280
April 15, 1993

Lab Sample No. 31280-4

Client ID: CP103A-0493

TPH Per EPA SW-846 Modified Method 8015
Date Extracted: 4-12-93
Date Analyzed: 4-14-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Fuel Hydrocarbons	ND	0.75	

<u>SURROGATE RECOVERY, %</u>	
1-chlorooctane	91
o-terphenyl	98

TPH Per EPA Method 418.1
Date Extracted: 4-9-93
Date Analyzed: 4-9-93

<u>Parameter</u>	<u>Concentration, mg/L</u>	<u>PQL</u>	<u>Flag</u>
Total Petroleum Hydrocarbons	ND	1.0	

ND - Not Detected
PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 25 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-5

Client ID: TRIP BLANK 2

Volatile Organics by Method 8240
 Date Analyzed: 4-10-93

Compound	Concentration ug/L	PQL	Flag
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	5.5	5	
Acetone	0.92	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Continued

SOUND ANALYTICAL SERVICES, INC. SERVICES

Burlington Environmental, Technical Services
 Project: 624878-7306 Pier 91
 Page 26 of 26
 Lab No. 31280
 April 15, 1993

Lab Sample No. 31280-5

Client ID: TRIP BLANK 2

8240 Continued . . .

Compound	Concentration ug/L	PQL	Flag
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

Volatile Surrogates

Surrogate Compound	Percent Recovery	Control Limits	
		Water	Soil
Toluene - D8	97	88 - 110	81 - 117
Bromofluorobenzene	98	86 - 115	74 - 121
1,2-Dichloroethane-D4	109	76 - 114	70 - 121

SOUND ANALYTICAL SERVICES


 DENNIS L. BEAN

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31280qcl
Units: ug/L
Date: April 15, 1993
Blank No: V9714
Date Analyzed: 4-10-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	3.8	5	J
Acetone	2.3	50	J
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

This report is issued solely for the use of the person or company to whom it is addressed. This laboratory accepts responsibility only for the due performance of analysis in accordance with industry acceptable practice. In no event shall Sound Analytical Services, Inc. or its employees be responsible for consequential or special damages in any kind or in any amount.

SOUND ANALYTICAL SERVICES, INC.

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31280qcl
Date: April 15, 1993
Blank No: V9714
Date Analyzed: 4-10-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	99	86 - 115	81 - 117
Bromofluorobenzene	99	76 - 114	74 - 121
1,2-Dichloroethane d4	103	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31280qc2
Units: ug/L
Date: April 15, 1993
Blank No: V9759
Date Analyzed: 4-12-93

METHOD BLANK

Compound	Result	PQL	Flags
Chloromethane	ND	10	J
Bromomethane	ND	10	
Vinyl Chloride	ND	10	
Chloroethane	ND	10	
Methylene Chloride	2.9	5	
Acetone	ND	50	
Carbon Disulfide	ND	5	
1,1-Dichloroethene	ND	5	
1,1-Dichloroethane	ND	5	
1,2-Dichloroethene (Total)	ND	5	
Chloroform	ND	5	
1,2-Dichloroethane	ND	5	
2-Butanone	ND	25	
1,1,1-Trichloroethane	ND	5	
Carbon Tetrachloride	ND	5	
Vinyl Acetate	ND	25	
Bromodichloromethane	ND	5	
1,2-Dichloropropane	ND	5	
Cis-1,3-Dichloropropene	ND	5	
Trichloroethene	ND	5	
Dibromochloromethane	ND	5	
1,1,2-Trichloroethane	ND	5	
Benzene	ND	5	
Trans-1,3-Dichloropropene	ND	5	
Bromoform	ND	5	
4-Methyl-2-Pentanone	ND	25	
2-Hexanone	ND	5	
Tetrachloroethene	ND	5	
1,1,2,2-Tetrachloroethane	ND	5	
Toluene	ND	5	
Chlorobenzene	ND	5	
Ethyl Benzene	ND	5	
Styrene	ND	5	
Total Xylenes	ND	5	

ND - Not Detected

PQL - Practical Quantitation Limit

This report is issued solely for the use of the person or company to whom it is addressed. This laboratory accepts responsibility only for the due performance of analysis in accordance with industry acceptable practice. In no event shall Sound Analytical Services, Inc. or its employees be responsible for consequential or special damages in any kind or in any amount.

SOUND ANALYTICAL SERVICES, INC. SEP 10, 1993

QUALITY CONTROL REPORT

VOLATILE ORGANICS PER EPA METHOD 8240

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31280qc2
Date: April 15, 1993
Blank No: V9759
Date Analyzed: 4-12-93

VOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Toluene - d8	101	86 - 115	81 - 117
Bromofluorobenzene	90	76 - 114	74 - 121
1,2-Dichloroethane d4	113	88 - 110	70 - 121

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31280qc3
Units: ug/L
Date: April 15, 1993

BLANK SPIKE RECOVERY

Date Analyzed: 4-10-93

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	42	50	84	42	50	84	0.0	
TCE	51	50	102	51	50	102	0.0	
Chloro-benzene	50	50	100	49	50	98	2.0	
Toluene	51	50	102	50	50	100	2.0	
Benzene	49	50	98	48	50	96	2.1	

%R = Percent Recovery
= (BS / SA) x 100
RPD = Relative Percent Difference
= [(BS - BSD) / ((BS + BSD) / 2)] x 100

ND - Not Detected

ADVISORY LIMITS	RPD	% RECOVERY
1,1-Dichloroethene	22	59 - 172
Trichloroethene	24	62 - 137
Chlorobenzene	21	60 - 133
Toluene	21	59 - 139
Benzene	21	66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

VOLATILE ORGANICS - METHOD 8240

Client: Burlington Environmental, Technical Services
Lab No: 31280qc4
Units: ug/L
Date: April 15, 1993

BLANK SPIKE RECOVERY

Date Analyzed: 4-12-93

Parameter	Blank Spike Result (BS)	Spike Added (SA)	%R	Blank Spike Dup Result (BSD)	Spike Added (SA)	%R	RPD	Flag
1,1-DCE	43	50	86	43	50	86	0.0	
TCE	53	50	106	51	50	102	3.8	
Chloro-benzene	53	50	106	51	50	102	3.8	
Toluene	54	50	108	52	50	104	3.8	
Benzene	52	50	104	52	50	104	0.0	

%R = Percent Recovery

= (BS / SA) x 100

RPD = Relative Percent Difference

= [(BS - BSD) / ((BS + BSD) / 2)] x 100

ND - Not Detected

ADVISORY LIMITS

RPD

% RECOVERY

1,1-Dichloroethene	22	59 - 172
Trichloroethene	24	62 - 137
Chlorobenzene	21	60 - 133
Toluene	21	59 - 139
Benzene	21	66 - 142

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

TPH by Method 418.1

Client: Burlington Environmental, Technical Services
Lab No: 31280qc5
Matrix: Water
Units: mg/L
Date: April 15, 1993

METHOD BLANK

Parameter	Result	PQL
Total Petroleum Hydrocarbons	ND	1.0

ND - Not Detected

PQL - Practical Quantitation Limit

BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY

Parameter	Sample Result (SR)	Spiked Sample Result (BS)	Spike Added (SA)	BS %R	Spike Dup Result (BSD)	MSD %R	RPD	Flag
TPH	ND	91	100	91	87	87	4.5	

%R = Percent Recovery

$$= [(BS - SR) / SA] \times 100$$

RPD = Relative Percent Difference

$$= [(BS - BSD) / ((BS + BSD) / 2)] \times 100$$

SOUND ANALYTICAL SERVICES, INC. SERVICES, I

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 1 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31280qc6
Matrix: Water
Units: mg/L
Date: April 15, 1993

DUPLICATE

Dup. No. 31280-1

Parameter	Sample (S)	Duplicate (D)	RPD	PQL	Flags
Total Petroleum Fuel Hydrocarbons	ND	ND	0.0	0.75	
<u>SURROGATE RECOVERY%</u>					
1-chlorooctane	80	57			
o-terphenyl	102	89			

RPD = relative percent difference
$$= [(S - D) / ((S + D) / 2)] \times 100$$

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MS/MSD No. 31280-1

Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	RPD
Total Petroleum Fuel Hydrocarbons	ND	352	402	88	345	1.9

%R = Percent Recovery

$$= [(MS - SR) / SA] \times 100$$

RPD = Relative Percent Difference

$$= [(MS - MSD) / ((MS + MSD) / 2)] \times 100$$

SOUND ANALYTICAL SERVICES, INC. SERVICES,

QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons
by Method 8015

Page 2 of 2

Client: Burlington Environmental, Technical Services
Lab No: 31280qc6
Units: mg/L
Date: April 15, 1993

BLANK SPIKE RECOVERY

BS No. 032R0101.D

Parameter	Spike Added (SA)	Spike Recovered (SR)	%R
Total Petroleum Fuel Hydrocarbons	402	406	101

%R = Percent Recovery
= (SR / SA) x 100

METHOD BLANK

Blank No. 011R0101.D

Parameter	Result	PQL
Total Petroleum Fuel Hydrocarbons	ND	0.75
<u>SURROGATE RECOVERY%</u> 1-chlorooctane o-terphenyl	96 111	

ND - Not Detected

PQL - Practical Quantitation Limit

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Client Name: Burlington Environmental, Technical Services
Lab No: 31280qc7
Date: April 15, 1993

SEMI-VOLATILE ORGANICS

COMPOUND	SPIKE (ug/L)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD	FLAGS
Phenol	100	ND	23	23	25	25	5.9	
2-Chlorophenol	100	ND	56	56	56	56	0.0	
1,4-Dichlorobenzene	100	ND	39	39	42	42	6.7	
N-nitrosodi-n-Propylamine	100	ND	54	54	60	60	10	
1,2,4-Trichlorobenzene	100	ND	45	45	49	49	7.5	
4-Chloro-3-Methylphenol	100	ND	57	57	57	57	0.0	
Acenaphthene	100	ND	49	49	53	53	7.0	
4-Nitrophenol	100	ND	21	21	23	23	12	
2,4 Dinitrotoluene	100	ND	54	54	59	59	7.6	
Pentachlorophenol	100	ND	43	43	46	46	6.7	
Pyrene	100	ND	59	59	61	61	3.2	

RPD = Relative Percent Difference

% REC = Percent Recovery

ND - Not Detected

ADVISORY LIMITS:

	RPD	% RECOVERY
Phenol	42	12 - 89
2-Chlorophenol	40	27 - 123
1,4-Dichlorobenzene	28	36 - 97
N-nitrosodi-n-Propylamine	38	41 - 116
1,2,4-Trichlorobenzene	28	39 - 98
4-Chloro-3-Methylphenol	42	23 - 97
Acenaphthene	31	46 - 118
4-Nitrophenol	50	10 - 80
2,4 Dinitrotoluene	38	24 - 96
Pentachlorophenol	50	9 - 103
Pyrene	31	26 - 127

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 1 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31280qc8
Units: ug/L
Date: April 15, 1993
Blank No: SBLK84-S8379

METHOD BLANK

Compound	Result	PQL	Flags
Phenol	ND	10	
bis(2-Chloroethyl) ether	ND	10	
2-Chlorophenol	ND	10	
1,3-Dichlorobenzene	ND	10	
1,4-Dichlorobenzene	ND	10	
Benzyl Alcohol	ND	20	
1,2-Dichlorobenzene	ND	10	
2-Methylphenol	ND	10	
bis(2-Chloroisopropyl) ether	ND	10	
4-Methylphenol	ND	10	
N-Nitroso-Di-N-propylamine	ND	10	
Hexachloroethane	ND	10	
Nitrobenzene	ND	10	
Isophorone	ND	10	
2-Nitrophenol	ND	10	
2,4-Dimethylphenol	ND	10	
Benzoic Acid	ND	50	
bis(2-Chloroethoxy) methane	ND	10	
2,4-Dichlorophenol	ND	10	
1,2,4-Trichlorobenzene	ND	10	
Naphthalene	ND	10	
4-Chloroaniline	ND	20	
Hexachlorobutadiene	ND	10	
4-Chloro-3-methylphenol	ND	20	
2-Methylnaphthalene	ND	10	
Hexachlorocyclopentadiene	ND	10	
2,4,6-Trichlorophenol	ND	10	
2,4,5-Trichlorophenol	ND	10	
2-Chloronaphthalene	ND	10	
2-Nitroaniline	ND	50	
Dimethyl phthalate	ND	10	
Acenaphthylene	ND	10	

PQL - Practical Quantitation Limit

ND - Not Detected

SOUND ANALYTICAL SERVICES, INC. SERVICES, IN

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 2 of 3

Client: Burlington Environmental, Technical Services
 Lab No: 31280qc8
 Units: ug/L
 Date: April 15, 1993
 Blank No: SBLK84-S8379

METHOD BLANK

Compound	Result	PQL	Flags
3-Nitroaniline	ND	50	
Acenaphthene	ND	10	
2,4-Dinitrophenol	ND	50	
4-Nitrophenol	ND	50	
Dibenzofuran	ND	10	
2,4-Dinitrotoluene	ND	10	
2,6-Dinitrotoluene	ND	10	
Diethylphthalate	ND	10	
4-Chlorophenyl phenyl ether	ND	10	
Fluorene	ND	10	
4-Nitroaniline	ND	50	
4,6-Dinitro-2-methylphenol	ND	50	
N-Nitrosodiphenylamine	ND	10	
4-Bromophenyl phenyl ether	ND	10	
Hexachlorobenzene	ND	10	
Pentachlorophenol	ND	50	
Phenanthrene	ND	10	
Anthracene	ND	10	
Di-n-butylphthalate	ND	10	
Fluoranthene	ND	10	
Pyrene	ND	10	
Butyl benzyl phthalate	ND	10	
3,3'-Dichlorobenzidine	ND	20	
Benzo(a)anthracene	ND	10	
bis(2-ethylhexyl)phthalate	ND	10	
Chrysene	ND	10	
Di-n-octyl phthalate	ND	10	
Benzo(b)fluoranthene	ND	10	
Benzo(k)fluoranthene	ND	10	
Benzo(a)pyrene	ND	10	
Indeno(1,2,3-cd)pyrene	ND	10	
Dibenz(a,h)anthracene	ND	10	
Benzo(g,h,i)perylene	ND	10	

PQL - Practical Quantitation Limit
 ND - Not Detected

SOUND ANALYTICAL SERVICES, INC. SERVICES, INC

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA METHOD 8270

Page 3 of 3

Client: Burlington Environmental, Technical Services
Lab No: 31280qc8
Date: April 15, 1993
Blank No: SBLK84-S8379

SEMIVOLATILE SURROGATES

Surrogate	Percent Recovery	Control Limits	
		Water	Soil
Nitrobenzene - d5	80	35 - 114	23 - 120
2-Fluorobiphenyl	61	43 - 116	30 - 115
p-Terphenyl-d14	73	33 - 141	18 - 137
Phenol-d6	35	10 - 94	24 - 113
2-Fluorophenol	53	21 - 100	25 - 121
2,4,6-TBP	71	10 - 123	19 - 122

SOUND ANALYTICAL SERVICES, INC. SERVICES

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B1: This analyte was also detected in the associated method blank. The reported sample results have been adjusted for moisture, final extract volume, and/or dilutions performed during extract preparation. The analyte concentration was evaluated prior to sample preparation adjustments, and was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was also detected in the associated method blank. However, the analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X7a: RPD value for MS/MSD outside QC limits due to high contaminant levels.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

CHAIN OF CUSTODY



CHAIN-OF-CUSTODY RECORD

C.O.C. SERIAL NO. 6225

RELINQUISHED BY

SIGNATURE

RECEIVED BY

SIGNATURE

DATE TIME

DATE	TIME
4-6-93	1645
4-7-93	12:20

SIGNATURE

4-7-93	9:30A
4/7/93	9:30A

SHIPPING NOTES

SHIPPING NOTES *Picked up By Sound Analytical Courier*

LAB NOTES